Putnam's Garden Handbook

By

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"Putnam's Household Handbook," "Putnam's Vegetable Book," "Putnam's Handbook for Mothers"

G. P. Putnam's Sons
New York and London
The Knickerbocker Press

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(Under the title *1000 Hints on Flowers and Birds*)

The Knickerbocker Press, New York

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Putnam's Garden Handbook

THE ART OF GROWING FLOWERS

No country in the world is quite so well adapted to the culture of flowers as America. Even in the crowded city, flowers are possible. The conditions of growing them are more trying but still they can be grown, and in the city the efforts required to produce them will receive far more appreciation than in the country or suburbs. Then why should not Americans have gardening for their art? We have unlimited space; we have a wonderful variety of climatic and soil conditions, suitable for a wide variety of flowers, and somewhere in this country flowers of every known species can be grown.

Every flower is worthy of cultivation. Few flowers there are which will not give marvelous results if carefully tended, and some of the com-

monest weeds under careful cultivation will produce glorious garden plants. Indeed some of the rare plants of one section of the country are weeds in another section and the great majority of our flowers were once grown wild.

A great many who might readily grow flowers with great success hesitate to attempt their cultivation because of limited space, such as the tiny city back yard, or because of what they consider unfavorable climatic conditions resulting in a short season. The first-mentioned obstacle should be no obstacle. A small space well kept is far preferable to a large plot which cannot have the desired attention given it, and though city back yards often get little sunlight there are a number of plants that thrive best in shady or partially shady places. A list of some of these flowers will be found elsewhere in this book by referring to the index. Where there is no yard at all, as for instance, in the city apartment, window boxes are possible, and even if the windows are on the north side of the house, flowers which require little sunlight will flourish. The lily of the valley, for one, has no superior in fragrance or appearance, and it grows and multiplies rapidly in a shady, damp location, and is just as suitable for a window box as for an outdoor garden. Then

there are house plants galore for the winter months when window boxes as well as outdoor gardens must be abandoned. One little plant will lend an air of cheerfulness to a room, even if it be not a flowering variety, and anyone can have some sort of house plant. A list of plants suitable for potting can be found by referring to the index.

In the city apartment, there arises the problem of obtaining earth but a bag of heavy cotton, or thick paper, and a suitcase, on a day when one wants to take a journey into the woods, will solve this problem, and soil taken from a spot where vegetation is more or less rank can be depended upon to be fertile. Then there are fertilizers to be purchased in commercial form, and a very small package of fertilizer will go a long way with a few house plants. Whatever obstacles there may be, flower-growth is possible in every home if one will but take the pains—it cannot be called trouble—to have them.

Where there is more than one member of the family able to spend a little time on gardening, competition should be encouraged, for then the flowers will be sure to receive attention and there will be an added zest in watching them grow. Children should be trained to a love of flowers and to a study of the habits of plant life. It is

a wonderfully broadening subject and one which never fails to give pleasure, and the results forever justify the labor expended.

The cost of flowers is small, very small, in comparison to the study of any other art. A package of seed which will produce a hundred or more plants can be purchased for ten cents and most packages give directions for planting. Small plants of three or four inches in height also are very inexpensive, though the pleasure is greater to watch the plants develop from seedlings. Then there is the pleasure to be derived from developing wild flowers which can be had in the woods for the gathering. Wild flowers of pretty foliage carefully nurtured will grow and often produce wonderful results.

Bulbs are immensely satisfactory when house-blooming plants are desired. They require little attention and can be forced for blooming at any period. Directions for forcing can be found on another page by referring to "bulbs" in the index.

Four features of the garden claim close attention, and these are the lawn, the walks, the beds, and the borders. The first two are discussed elsewhere in this volume, while the last two may be treated as one. One wide bed will give a far prettier effect than three or four narrow ones and

the plants will have a better chance for development; and a few large beds with clumps of flowers planted seemingly at random will be far less formal than set beds and borders apparently designed with a view to putting into the garden all that could be crowded in. Straight lines in a small garden are preferable but on a large plot, curves and angles may be indulged in, though elaborate, fancy shapes are never to be desired. It is the plants which should be displayed, not the beds. The more natural the appearance of the garden the more beautiful it will be. Anything suggestive of artificiality will detract from the picture at a glance.

The contour of the garden, as well as the proportions of the lot, must be studied before the planting is begun. A straight narrow lot cannot be treated in the same manner as the lot irregular in shape. The irregular lot already is informal. If possible, dispense with a fence around the garden. In localities where animals are allowed to run at large this will not be possible, but even then it may have flowers and shrubbery planted near to break the lines, and vines may be trained to grow on it. Both perennials and annuals should be included in the list of flowers, perennials in order that new growth will not have to be

depended upon absolutely each season, and annuals to furnish fresh, new plant life and a larger variety of flowers. An evergreen or two should not be omitted, otherwise the fence will appear cold and bleak in the winter. Vines furnish the easiest and most graceful manner of hiding an unattractive object, and vine cultivation is not tedious. Many vines are self-perpetuating and most of them abound in foliage rather than in flowers, thus making very attractive screens. And so a fence which must be hidden, can be, or at least it may be covered, in such way that it will not be conspicuous.

The assortment of flowers is deserving of the utmost care in choosing. Any flower is better than none, but there is such a wide variety from which to choose that the individual taste can always be suited. Plants should be chosen always with the idea of getting the most benefit from each one. The tender, delicate plants, like tender, delicate children, require constant attention, and there are many hardy varieties for the gardener who cannot give a great many hours weekly to the pleasant task of gardening. For amateur gardeners the more hardy plants should always be selected. Delicate plants may prove discouraging and the garden may be given up,

when if easy-growing plants were attempted at first, the knowledge gained by working with them would be a good start toward caring for the tender plants. Many of the less hardy plants are most beautiful, and it is well worth one's while to spend time on cultivating them.

So let us hope that America is coming to the adoption of gardening as her art. This is an art every housewife can practice while about her daily work, and the cheer she receives from watching a tender young plant begin to take on growth will help wonderfully in creating the right kind of home atmosphere for her family.

ESSENTIALS IN GARDENING

THE soil and the air produce our plants. The air furnishes carbonic acid, which is of the most vital importance, and the soil the nourishment which is fed to the plant through the root. Soil without the proper elements in it will never produce worth-while vegetation. A child cannot thrive if it is not fed the proper food, and plants, like children, differ in their requirements. The soil must be suited to the plant. Some plants require a rich soil, some a light soil; some require a great deal of moisture while others will do best in a semi-dry state; and each species of flower must be studied individually in order to supply it with the correct proportions of nitrogen, potash, and phosphate, the three essentials in plant nourishment.

No flower will do its best in a hard, dry soil. Before planting, the soil should be thoroughly pulverized. It should first be spaded and harrowed to a depth of from one to two feet for the average garden bed, and even deeper than that

for plants with long roots. In setting out young, tender plants in the garden or in potting house plants, the soil should be made as fine as it is possible to have it. A good method to follow is to procure a dirt sifter and sift the earth thoroughly. If a ready-made sifter can be procured so much the better, but even a homemade one will serve the purpose admirably. It can easily be made by simply nailing a piece of one sixteenth of an inch wire mesh to a wooden frame and setting this slantingly on a support, or by leaning it up against a fence. The soil should be thrown, a shovelful at a time, against the wire, when all the soft, fine sand will go through and fall on the under side, and the coarse particles which cannot go through will fall in front of the sifter. The sifted sand will be excellent.

Soil should always be analyzed before it is fertilized. An amateur cannot tell what the soil requires until the plant has grown and either flourished or suffered from the soil conditions. A soil already rich in nitrogen should not have nitrogenous food added to it or the plants will die from overfeeding. Nitrates are among the most commonly used fertilizers but most gardens could stand more phosphate than they usually get. Phosphate is the flower-producing fertilizer,

and unless there is a sufficient quantity of phosphate in the form of bone meal, basic slag, or a similar product, the plants may grow and flourish with regard to leaf and stem and the flowers be pale and sickly. Potash is beneficial to flowers which are valued for their fragrance.

The planting of seed in a way to obtain the best results is simple, but in order to produce the greatest number of seedlings from the amount of seed sown they, like everything else in the garden, must be handled carefully and not sown in a haphazard fashion. The soil for seed should always be finely pulverized and then baked in a hot oven for an hour or more to kill any seed of weeds which may be laying dormant. If this is not done weeds are likely to come up in profusion and if not detected at once and pulled out the flower seedlings will be puny and unhealthy for lack of the nourishment which the weeds have stolen. Seeds require warmth, moisture, and air in order to germinate, and if either of these is lacking there will be a poor crop. The atmosphere of the seed bed should be kept as fine as possible so that the young plants when first bursting forth from the soil may not be injured by being chilled, otherwise they may never reach maturity. The bed should be kept not wet but slightly moist in

order to aid in bursting the pods open, and there must be plenty of fresh air to supply carbonic acid, on which so much depends.

The depth at which seeds should be planted varies with the size of the seed. A very fine seed may be sown broadcast and no covering of earth whatever applied, all that is necessary being to press the earth down flat and firm with some flat surface, preferably a board. Larger seed will require a trench or a sprinkling of earth scattered over them, while the very large seeds, such as nasturtiums, moonflowers, and others of the same size, may be placed on the surface of well-prepared soil and gently pushed down into the earth with the flat end of a lead pencil, reaching a depth of two or three times the diameter of the seed. Absolutely fresh seed should always be procured if possible, as a very small percentage of seed has vigorous life after the first year and some will not even germinate. The seed bed should be kept moist, but never wet, otherwise the seed will rot before they can germinate, or if they have germinated the young seedlings will drop off. If the earth is allowed to become dry and hard, then wet and soft alternately, only a dismal failure will confront the gardener at the end of the period set for seed germination.

When the young seedlings have appeared they should not be tampered with until they have attained a growth of an inch or more, other than to pull out any weeds which may have started, but if the earth has been baked preparatory to planting, there will not be many weeds.

If the seeds have been very successful in germination, they may come up too thickly, in which case some of the less hardy ones should be thinned out to give the best plants every opportunity, and after they have grown a couple of good leaves, they are ready for transplanting, if they are to be transplanted. They should not remain too long in the seed bed, for plants which bear transplanting will benefit by having their soil changed as soon as they are old enough to stand it.

Transplanting is a new era of life to the young plant, and the work requires the utmost care. Occasionally a plant will grow and flourish if it has been pulled up by the roots and stuck in a hole in the ground, but to insure success, all vegetation should be carefully handled in transplanting. In most cases the soil should be moderately moist and the earth should be warm enough that there will be no danger of chill caused by transferring the plant to new soil. A good clump of earth should always be removed with

the roots in transferring it from one location to another. This will keep the roots from getting a shock at the removal. After transplanting, the soil should be tamped down firmly,—with the hand for the house plants and with the foot for garden plants,—a little indenture being made around the stem so that water will not drain off. In some cases water should be applied to the roots of the plant as they are put into the hole, this treatment depending upon the atmospheric conditions, as well as upon the dryness of the soil. In the case of full-grown plants, shrubs, and trees, water should always be poured on the roots.

After young plants have been set in their new home and after large plants have been permanently located, the time for cultivation is at hand. Without it nothing but weeds will thrive. Hoes, spades, forks, and trowels will be necessary for this work, the larger implements for working with large plants in outdoor gardening where there is plenty of space between the vegetation, and the smaller forks and trowels for use in cultivating house plants and small garden flowers which have many fine roots. Cultivation should be given frequently, otherwise the plants will not flourish. An occasional digging around the plants now and then will not be of much benefit. Cultivation

not only conserves the moisture in the soil but it permits the air to reach the roots of the plant as well. Hard, dry earth must be broken up. Roots cannot push their way through it when in search of nourishment, and the growth of the stems and leaves will be retarded when root growth is retarded.

Weeds must be kept down. If they once get a start they are hard to eradicate, hence vigilance must be exercised from the beginning. Often there is no other remedy than to pull these nuisances up by hand or with the weeding hook, which will be found most serviceable, as any application to kill the roots of weeds will be likely to result in poisoning the roots of flowers as well.

Watering the flowers is something that every gardener must expect to have to do and to do with regularity. Even out of doors rain cannot be depended upon. Water furnishes the sap which courses through the stems and leaves, and without the amount of moisture suited to its individual need no plant can grow luxuriously. Often when a plant is not thriving, all that is needed is water. Large plants and trees should have a pipe driven into the ground near them, and the water should be poured down this by means of a funnel stuck in the upper end of the pipe. In this way the

water will reach the roots in dry weather, and it is really not of very much importance whether the surface of the ground is wet or not. Plants should be studied and notes should be made as to just which require an abundance of moisture and which do not. An occasional watering after the earth has grown hard and dry is better than none but it will not do much to promote growth.

SPECIAL FEATURES OF THE GARDEN

THE flowers which give the greatest pleasure are those which can be cut and attractively arranged in vases for indoor decoration. Not all flowers are suitable for cutting, and every garden should be planned with a view to having some blossoms for the house at all seasons of the year. Short-stemmed flowers for small bowls and dishes and long-stemmed ones for tall vases will prove a constant source of pleasure for the woman who would give to her living room a note of cheer and to her dining table add an extra charm. Flowers that shatter easily are good only for the yard, and while many of these are so pretty in their delicacy that no gardener would want to eliminate them, they must not be permitted to occupy so much space that there will be no room for more hardy blossoms. The beds should be planted with a view to having a variety of color, for however beautiful the flower may be, it will not receive as much appreciation if it is used continuously instead of being alternated with other blossoms.

For cut flowers the deepest shades usually give the greatest pleasure. There is nearly always surrounding color indoors and not the quantity of green for a background which is afforded in the open garden, and pale, delicate hues are likely to lose their identity amid the strong contrasting colors of indoor decoration.

The style of vase for cut flowers will have an important bearing upon their appearance, and the beauty will be either enhanced or detracted from according to whether the right vase or the wrong one is used. Long-stemmed heavy flowers placed in a delicate dainty vase will not show to advantage, while short-stemmed blossoms stuck in the top of a tall vase will certainly seem out of proportion if not somewhat ridiculous. Vases should never be gaudy in appearance, nor even profusely decorated. If a vase is to be used as a piece of statuary it may be of fanciful design, but the vase used to display flowers should be simple in line and decoration. Yellow daffodils in a plain yellow pottery vase will be most beautiful, as will pink roses in a pink rose-bowl, but not red roses in a pink rose-bowl. And flowers should never be crowded in the vase. Nature does not crowd her flowers on a stem and the more natural the arrangement, the more beautiful the flowers.

Cut flowers cannot be procured every month of the year unless one has a greenhouse or patronizes a florist constantly, so a simple and inexpensive way of insuring flowers is to have a collection in pots. Everyone can have one or more house plants. There is really no excuse in the world which will hold good when it comes to denying a house the right to a blossom. No other mark of decoration will do so much for a room and no other object will yield so much pleasure as the growing plant. Outdoors much of their real value is lost among the foliage of other plants, but indoors they receive the appreciation due them, and among objects remaining stationary day after day the growing plant, with its ever-changing form, will be of great interest.

A variety of color among the house plants should be selected; and if the plants are kept in the conservatory, or some place which serves as a conservatory, and are brought out one at a time and placed in the living room or on the dining-room table, each will be a new delight in its turn. No house plant should remain more than two or three days in the living room without being replaced by another while it is set in the sunlight again, otherwise it will soon droop.

House plants usually get plenty of attention, as

generally they are placed within easy reach of the houseworker, and it is more readily observed when they are in need of water and when bugs and worms are making their raids. An old fork kept handy will insure frequent cultivation, for it is an easy matter to dig around a plant when an implement is near at hand, while the plants might be neglected if search had to be made for a fork or trowel.

As a rule very few plants are used as house plants, while there really is a great variety which can be grown successfully indoors. A list of such plants, will be found by referring to the index. House plants should be transferred to the open ground in the summer time. Taken out of doors and allowed to stay, they will thrive splendidly and the new growth will have become hardened for the fall. Pot and plant should be set in the ground together and there will not have to be a retransplanting when the plants go back to the greenhouse in the autumn, with root disturbance attendant upon removal.

The location for house plants should be one of the best in the house. They require sunlight and air, and a southern exposure will be admirable, for not having to fight the cold drafts which seep through the cracks on the north side of the house

they will not run the constant risk of chill. If glass is between them and the sun so much the better.

A specie of plants which are not commonly cultivated are the water plants. They not only provide a flower different in type from the garden plants but they are novelties which soon win their way into the hearts of flower lovers and retain for themselves a prominent place in the garden catalogues. Water plants may be grown with equal success indoors or out if the conditions are favorable, and while the variety is not extensive most of them are beautiful enough that the owners will not tire of them. There is no flower more beautiful in form nor more delicious in fragrance than the old-fashioned pond lily. It grows and flourishes from Maine to Florida and from California to New York, though its season is short in the colder sections of the country. However it is well worth cultivating for the short time it does last. This flower is not often used as an indoor plant because of its demand for water, and yet where it can be used it furnishes a most beautiful means of decoration. I once attended a wedding in the little town of Bagdad, Florida, at eight o'clock in the morning, where the decoration consisted solely of pond lilies and smilax in Kate Greenaway baskets hanging from the chandeliers

and other convenient places. This was a novel flower decoration and it meant gathering lilies at five o'clock in the morning, but who would really mind being one of a gay bridal party gathering pond lilies even at that hour? One objection which is frequently uttered against the garden pool is that it breeds mosquito larvæ, but this objectional feature can be avoided by placing in the pool a small collection of goldfish which will eat the larvæ and at the same time add to the charm of the pool.

In close proximity to the pool or collection of pools may be placed the rock garden. The landscape plan naturally calls for this proximity and water near the rocks will seem a natural result though it may be wholly man's arrangement. Some of our most beautiful plants will thrive best in the rock garden, with its well-drained soil and the heavy foundation of rock surface which lends value to the beauty of the surroundings and furnishes splendid background for the reds, whites, greens, blues, and yellows of the flowers growing among them. No attempt is made to enumerate here the variety of plants which are suitable for the rock garden. This list is reserved for another page.

The season for blossoms in the rock garden is

limited, and the plant that can be transplanted without harm had best be started in the hotbed in paper cups or dirt bands and transferred to the garden after the sun has warmed the soil in the early spring.

While the majority of the plants for the rock garden should be of a spreading nature there is always a place for tall growing plants such as the dianthus, snapdragon, and phlox, and there will be very apt to be nooks and corners which will need some of the taller plants to serve as a background. A variety of color should be planned and bright reds, brilliant blues, and deep yellows should be generously supplied, otherwise the dark rocks will give the garden a more or less cheerless aspect. Here probably more than in any other part of the garden one should strive for balance in coloring. The rock garden should be planned as early in the season as the weather will permit, for most rock-garden plants blossom during the early summer months. The soil should be most carefully mixed and a good composition is one part leaf-mold, two parts of loam or turfy soil, and one part of sand. A little lime can be added to advantage in the places where edelweiss, saxifrages, primroses, and poppies are planted, or the soil may become a bit sour for them.

Gardening can hardly be carried on advantageously without the aid of a greenhouse or a hotbed, and as the majority of gardeners cannot afford a greenhouse a plea is entered for the hotbed, which anyone can afford. In the following pages are suggestions for making and caring for the hotbed, which will show how simple it really is, though it is generally looked upon as being something difficult to make and as more or less hard to operate.

With the aid of the hotbed the length of the flower season is increased almost one third. In the hotbed only can heat, light, and air be properly regulated for tender young plants. When the attempt is made to plant seed indoors in boxes, awaiting transplanting to the out-of-doors later, they are often killed by someone thoughtlessly leaving the door open and creating a draft, or by neglect to keep them supplied with moisture, as watering so often means wetting the floor unless the box has unusually good drainage. When the soil becomes dry and hard, and wet and soggy, alternately, they will not live. The hotbed has no other motive than to protect and promote the life of young plants, and it should be placed in a corner so easy to reach that when the hardening-off process has begun the plants may receive daily atten-

tion without giving too much trouble. When a hotbed is once started it will not require much thought. Soil need only be changed every two or three years, though occasionally a little fertilizer may be added while the plants are growing or before the seeds are planted. This had best be added with growing plants in liquid form in order not to disturb the young roots. And so I would advise every gardener to provide himself or herself with a hotbed of as generous proportions as his garden demands.

Abutilon

The abutilon makes an excellent climbing plant. The shoots should be pruned back each spring and the main stem fastened to the trellis or other support on which it is to climb. *It requires a rich soil and good drainage*, though the earth should be kept moderately moist.

Abutilon plants are among the most beautiful of plants for the house. It is very easy to grow if given a good loam soil and sufficient drainage by placing pebbles in the bottom of the pot.

Achillea

The achillea is a most satisfactory plant when rapid growth is desired to spread over a bare space. *It will thrive in ordinary garden soil*, and is at its best when massed in large clumps. *The seed should be sown in the hotbed*, or indoors, and the

young seedlings transplanted to the garden as soon as danger of frost is over.

The outer shoots of the achillea should be removed to keep it from spreading to spaces designed for other plants or it may soon crowd them out. It should be staked to keep it in good condition, as the branches will soon lie flat on the ground and the rain will beat the earth upon them to their detriment.

Achillea plants require little attention after they have once attained a good growth. The soil will not demand much in the way of fertilizer, a little liquid fertilizer applied once a year being all that is needed usually, though to lift the plants and work into the soil a little manure will be beneficial every two or three years.

Ageratum

Ageratum grows well in almost all soils and through a wide range of climate. The seed may be sown in the cold frame in March and the seedlings transplanted as soon as the ground is warm enough. Seeds sown in August will produce good plants for winter flowering. Everyone

should have blue ageratum, at least, as there are so few blue flowers.

Ageratum is very attractive when planted *among sweet alyssum, candytuft,* and other small plants.

Alyssum

Sweet alyssum should be given a liberal amount of fertilizer. The blossoms are profuse, and unless kept fairly enriched the foliage will be dull and unattractive, sometimes falling off altogether.

Alyssum should be sown where it is to grow, though it may be transplanted with fairly good results as soon as the soil is warm enough in the spring. For winter bloom, it may be sown in August. The plants should be thinned to four inches apart.

Cuttings may be made from alyssum, using only the strong new side shoots.

To cut back the first flowers of alyssum when they fade will cause other flowers to be produced.

Anchusa

Cuttings may successfully be made of anchusa, or alkanet, from stems two inches in length. They should be rooted in light, sandy soil, and are best made in the fall of the year. The flowers of the anchusa are great favorites with the bees and they are among the few *beautiful blue flowers.*

Anchusa plants require plenty of sunlight and a rich loam in order to thrive and produce the best flowers. The plant is self-propagating and does not require a great deal of care. When it branches out and crowds other plants, it will be benefited by pruning, removing the lower branches first.

Anemone

The anemone is commonly called japonica, or Japanese windflower. In the South it grows to be a large tree, attaining a growth of ten or fifteen feet. *It requires a rich soil,* though it should not be too heavy, and plenty of moisture.

In planting anemone as a hedge, it should have an extra supply of fertilizer applied to the roots, as the root growth is strong, and will soon take the substance from the soil. This plant should

be removed only in the spring, as interfering with the roots in the fall will disturb them so that they will hardly become adjusted before cold weather.

The Japanese anemone may be propagated by cuttings. The cuttings should be taken from growth a year old, and each cutting should have one or more joints. The joint should be buried in the ground, in sandy soil, and kept very moist until the roots appear.

Arbor-Vitæ

The arbor-vitæ lives to be *seventy-five or eighty years old.*

The arbor-vitæ requires a rich, well-drained soil in order to produce handsome foliage, for which it is grown. It is a native of Japan and makes a handsome hedge. When planted merely as decorative shrubbery, it should always have some lighter leaved evergreen clustered with it, otherwise, it will have a somber, cemeterial effect.

Arbutus

The arbutus requires a soil composed of sandy peat or loam which is moist, but well drained. It should be planted where it is to remain, as it does

not transplant very well when it has grown to a fairly good size.

The arbutus is a most satisfactory plant for experiment in grafting, and when grafting is successful, flowers of two colors, and also variegated flowers, may be found on the same tree.

Asters

Aster seed sown in the open ground in May will bring forth blossoms in September and October, when the flowers are seen at their best. For July and August flowering, the seed should be sown in the hotbed or in boxes in the house. They should be covered to a depth of half an inch and *covered with rich, light soil.* When the seedlings are transplanted they should have three or four leaves and should stand a foot and a half apart

Small quantities of *air-slaked lime or of fresh wood ashes stirred into the surface of aster beds* will prove very beneficial. The plants require plenty of water.

Fresh manure used in large quantities will usually prove *injurious to asters.* Only thoroughly composted manure should be used.

When asters are being attacked by the black potato beetle, the plants should be covered with mosquito netting or other thin cloth. Green netting will enable the plants to show through better than if white is used.

Nicotine solution should be used on asters when the black beetles make their attack. The asters should be closely watched for this pest, for it does great damage in a very short while after its appearance.

Azalea

The azalea belongs to the rhododendron family and is an evergreen generally used as a house plant. It *requires a rich soil* which should be kept moderately moist at all times. There are many varieties in the color of the flowers. *It is excellently adapted for grafting.*

Azaleas for Christmas blooming should be forced about the middle of November. The plants should be kept in a temperature of 60 degrees if the buds have already shown color, otherwise a warmer temperature will be necessary. The plants should be hardened by taking them gradually into a

cooler temperature before they are taken out of doors.

A potted azalea may be planted out of doors during the summer, the plant remaining in the pot, and taken up again in the fall with excellent results. Plants *will blossom profusely for several winters just at Christmas time* if properly cared for. It should have a great deal of sunlight for several weeks before Christmas.

Azaleas should be pruned immediately after the flowers fade, and the plants should be kept in a warm moist temperature for several weeks after pruning when they should be brought to the fresh air and sunlight to remain until fall.

In potting azaleas, the earth should be put into the pot in layers and each layer packed down firm. Loose soil will prove detrimental to the root growth and the plants will not flourish.

Azaleas require very careful watering. If they become dry they will soon die. If too much water is applied to them, they will damp off. They should be kept moderately moist at all times.

Leaf-mold should be applied to azaleas and laurel, and plenty of dead leaves placed over the surface in the fall will help to make leaf-mold. For leaves to remain on the soil near the plants during the summer will also be beneficial, tending to keep the earth damp and moist.

Bachelor's-Button

Bachelor's-button will thrive under almost any soil condition, and about the only attention it needs is to renew the soil once in every two years. It grows rapidly and should not be planted among other small plants or it will soon crowd them out. It is most suitable for corners where it is difficult to get less hardy plants to grow.

Bachelor's-button is most attractive when set out in groups. Single plants do not appear to advantage. In large numbers, the flowers are suitable for cutting.

Balsam

The old-fashioned balsam requires rich soil, a hot sun, and plenty of water. The plants are quick growers, and seed sown in the ground in May will

blossom eight weeks later. They should be from twelve to eighteen inches apart.

Transplanting balsam plants two or three times will dwarf the plants into a pretty shape and will also make the flowers more double.

Begonias

Begonias serve both as a plant and as a flower, with their beautifully colored leaves. They *require rich, moist soil and plenty of sunlight*, as well as plenty of room for their roots to spread.

Begonias are among the most delightful of house plants, and can also be successfully planted in the garden. *The soil should be very rich and moist*, in order to produce rapid and tender growth of the leaves for which the plants are valued.

When begonias have stopped blooming, the roots should be kept dry to check growth and give the plants a rest. After a week or so water may again be supplied, when fresh shoots will come forth to be taken off and replanted as cuttings.

One very satisfactory way of preserving tuberous begonia bulbs is to cut off the foliage when they

have ceased blooming and allow the earth in the pots to become thoroughly dried out, when they should be set away in a dark place. They should be set in fresh, new soil in the spring.

Bellflower

The Japanese bellflower is often called the balloon flower. The soil for growing these flowers *should be deep and rich, but not too heavy.* The flowers should be covered in the fall with a mulch of stable manure or leaves.

The bellflower blossoms profusely in July when propagated in the spring by seed. Root division should be made in the spring of the year also, as the plant cannot stand the change of soil just before cold weather.

When planting bellflower plants, never bend the roots to fit the hole. Instead dig a hole deep enough to set the plant in it with the roots set straight. To bend the roots may bruise them, as they are tender.

Blazing Star

The blazing star should be set in a fairly rich soil and be propagated from a division of the roots in

the spring or from cuttings, though the former method will prove the more satisfactory, when roots are to be had.

Bougainvillea

When the bougainvillea is just coming into flower it should not be allowed to become dry, but should have frequent waterings or the flowers will not thrive, and some of the buds may never even unfold.

Bougainvillea can be propagated by cuttings of half-ripened wood. The cuttings should be taken from the plant the latter part of February or the first of March and inserted in sandy soil, kept somewhat moist, until the roots have attained a good growth, when they should be planted in rich, friable soil.

Bridal Wreath

The bridal wreath, or Francoa, is a hardy perennial in the Southern States, and is most satisfactory either as a garden plant or for cutting to decorate with indoors. *The soil should be light and well drained,* though the plant will grow in almost any soil.

Plants of the *bridal wreath for indoor growing* require very little care. *A soil composed of fibrous loam, leaf-mold, compost, and sand* will give excellent results. The loam should predominate.

Branches of *the bridal wreath may be successfully grafted* on plants of different colors, with very satisfactory results. Cuttings may be rooted easily by placing them in moist sand and keeping them fairly warm.

Butterfly Flower

Seed of the schizanthus or butterfly flower should be sown under glass the latter part of March or the first of April. If sown where the plants are to grow, two or three weeks later will be the proper time. Mixed packages usually contain good strains of seed. Fairly rich soil will force a pretty growth of the pinnate foliage.

The butterfly flower is equally satisfactory as a house plant or as a garden annual. The stems should be supported while the plants are very young.

Calliopsis

For a plant having flowers for a long season, the calliopsis, or coreopsis, is as satisfactory as any

that can be found. It is easy to grow and is well suited for both outdoor flowering and indoor decoration. Its colors are yellow, brown, and red, and are very rich and handsome.

For summer flowers in localities having a climate corresponding to that of New York City, *calliopsis seed* should be planted in the hotbed in March. In warmer localities, the seed may be sown in the open ground in May. The flowers will last until frost.

Calliopsis plants should be staked to prevent the heavy rains washing the stem of the flowers and beating them to the ground.

The calliopsis, or coreopsis, requires light well-drained soil, and the plant will not need much cultivation. To produce very fine showy flowers, cultivation will be necessary, but there will be an abundance of flowers if left alone.

Candytuft

As an edging for flower beds, the little old-fashioned *candytuft* will be most pleasing. *The soil should be rich and the plants should be kept moist.*

If candytuft is grown for cutting the flowers, some of the flowers, at least half, should be removed in order to secure large blossoms for cutting.

The seed of candytuft should be sown in the garden during the month of April in the location where the plants are to grow, and the plants should be thinned when they have attained a height of an inch or two. Seed planted in September in the cold frame will produce *flowers for the winter months.*

Cannas

Cannas require a rich soil, plenty of water, and bright sunlight for their best development, hence they should never be planted near a shade. Their broad leaves need a great deal of nourishment, and unless watered freely will be a sickly green.

Cannas and dahlias are accustomed to warm climates and the bulbs will not stand the cold winter very well. They *should be dug up in the fall*, as soon as flowering ceases, *and stored in the cellar during the winter.* If the cellar is damp, the bulbs will be likely to freeze if cold and start growth if warm, while if it is too dry, the bulbs will shrivel. They should have plenty of air.

All the earth possible should be left clinging to the roots or bulbs of cannas and dahlias when taking them up to store away for the winter.

Cannas and caladiums can be used to good purpose in shrub borders and masking groups before the shrubs are sufficiently grown to produce the effect desired. They can also be *used to great advantage with the castor-oil bean.*

In separating roots of the cannas for the next summer's beds, a piece of the old stem should remain attached to each piece of root. This division of roots may be started in February or March with good results.

Canterbury Bell

The Canterbury bell requires a rich, sandy soil with good drainage in order to thrive, though it will grow under rather adverse conditions.

Canterbury bells comprise perennial, biennial, and annual flowering plants, and there should be a place for this little flower in every garden. For outdoor effects, they are glorious, and they can be grown with equal success in pots.

The seeds of biennial Canterbury bells should be sown out of doors in July, while annuals should be sown in April or early in May. There are two ways of preserving the perennials. One is to cover the outdoor plants with leaves or manure and another is to transfer the outdoor plants to pots during the winter, setting them in the garden again as soon as the ground grows warm.

The Canterbury bell, or slipperwort, or bell flower makes *a beautiful Easter plant.* The plants of the season previous should be kept pruned to produce flower buds at the right season.

Carnations

Carnations require a rich soil and an abundance of moisture if they are to flower profusely. They may be started in dirt bands and transplanted to the ground when danger of frost is over. The plants should not stand nearer than ten inches apart.

To root cuttings of carnations, strip the shoots that grow around the base of all the leaves growing on the lower half, and bend these shoots into the ground, making an incision with a sharp knife on the under side of the shoot. Pin the shoot

down with two small sticks in the form of a crotch and do not disturb for a couple of weeks or longer.

Carnations will root in boxes of sand quite readily. The shoot should be cut near a knot and the cutting should be four or five inches in length.

A little indigo blue, placed in the water in which carnations are placed after being cut, will *color white carnations a pretty blue.* In trying to get red, white, and blue flowers for decorative purposes on Washington's birthday, or at other times when blue flowers are hard to obtain, this plan should be used.

February and March are the best months in which to plant carnations. Carnations should have good drainage but the soil should be kept moderately moist, particularly while the seeds are germinating. The seedlings should be hardened before being transplanted.

A soil highly recommended for carnations is composed of one part of barnyard manure mixed with three parts of fibrous loam and two parts of coarse sand. This should be well mixed and kept in a damp place a month before using, when a couple of ounces of basic slag may be added to act as a tonic for the flowers.

Carnations will be much benefited by a fertilizer composed of an ounce each of sulphate of ammonia, kainit, and a superphosphate, dissolved in three gallons of water.

Castor-Oil Bean

The castor bean plant is very desirable for making shade in sunny spots, as well as for forming a very pretty temporary hedge. *It grows very rapidly* and often reaches a height of ten feet.

The castor bean requires a rich soil and plenty of moisture, but it will thrive very well indeed in a sandy soil and with little moisture. It is, indeed, one of the easiest of plants to grow.

When planting castor beans for shrubbery or hedge, plant them sufficiently far apart that the lower part of the plant may receive plenty of sunlight and the leaves branch out near the bottom.

The use of the castor bean plant with cannas, caladium, scarlet sage, or coleus will produce a very striking effect, and as a background for lower growing plants it has no equal among garden annuals. Its rich, luxuriant growth produces a semi-tropical effect.

Chrysanthemums

Chrysanthemums bloom more satisfactorily if the seeds are sown in hotbeds and the young plants transplanted to the open as soon as the soil has become sufficiently warm to receive them. They should be set about a foot apart when set in permanent locations.

If *chrysanthemum* buds are pinched back the work will be rewarded by a *great increase in the size of the flowers*, as well as by branching and stocky plants.

Chrysanthemums in pots require liberal feeding with fertilizers from August until the flowers come out. Liquid manure is the simplest way of fertilizing them.

Chrysanthemums require a rich, well-drained loam.

Lice frequently take up their abode *on the tender terminal shoots of the chrysanthemums. To get rid of them*, the leaves should be sprayed with a commercial nicotine solution or with water in which smoking or plug tobacco has been steeped for several hours. Soaking the tobacco in cold water for twenty-four hours will answer.

Propagating chrysanthemums from seed makes a very interesting study. Seeds saved from single-flowering plants often produce greatly improved varieties. The plants usually will be thrifty and will bloom the first year.

Cuttings of chrysanthemums should be inserted in pots of sandy soil. They should not be kept in a room which has a great deal of heat, for they are a cold-weather plant. As soon as they are well rooted they should be transferred to a rich loam with which has been mixed a little leaf soil and sand.

When it is desired to produce fine large chrysanthemums without regard to the number of flowers, all but one bud should be pinched off as soon as they appear. Usually the first crown bud which forms in the apex of the shoot will be the largest flower.

An excellent fertilizer for chrysanthemums may be made by mixing five ounces of nitrate of soda with five ounces of kainit, five ounces of a superphosphate, and one ounce of sulphate of iron. If this is desired in liquid form, dissolve the mixture in fifteen gallons of water.

A good soil for chrysanthemums is composed of three parts of turfy loam mixed with one part of well-rotted stable manure. Three or four ounces of basic slag or bone meal added to this will have a *beneficial effect on the flowers.*

Clarkia

Seed of the clarkia should be sown out of doors early in the spring and the plants should be partially shaded. *The best soil is a warm, light soil.*

The clarkia is most beautiful when planted in *window boxes and hanging baskets, and also as a border for the flower bed* or other low massing, as it not only has a pretty foliage growth but it blooms freely and has a variety of flowers.

Cobæa Scandens

The cobæa scandens requires a rich, well drained soil and under favorable conditions is a rapid grower. A trellis should be provided as soon as the plant is up for it will soon begin to climb.

Cobæa scandens seed should be planted where the vines are to grow, or else should be planted in paper cups and transplanted when the ground has be-

come sufficiently warm. The plants will not do their best under transplanting. The vine is grown as much for the foliage as for the flower.

Rabbit netting is more satisfactory than cord or wire *for tender vines such as the cobœa scandens.*

Cockscomb

The old-fashioned cockscomb is prized principally for its decorative features in the garden. Massed with shrubbery, it gives a most striking and pleasing effect. It is extremely easy to grow and is self-propagating. They come in both deep red and a striking yellow.

Cockscomb can be grown from seed *sown in slightly warm soil in April* and will be ready for transplanting during the month of May. If sown where the plants are to stand, the seed should be sown in May.

In transplanting cockscombs, see that the soil into which they are transplanted is very rich. If they are not transplanted until just as the combs begin to form, the combs will be large and handsome.

In *cutting cockscombs for drying for house decoration* in the winter, cut them before the seeds are

ripe and they will not fall apart. They may be dried in a moderately warm room in the house.

Columbine

The seed of columbine should be sown in the open ground in the spring and the seedlings should be thinned to about twelve inches apart. Seed sown in the autumn will produce flowering plants the following season. They are very easy to grow and require little cultivation. They will thrive in almost any soil but fertilization helps them.

The fact that *the columbine* blooms profusely for a long season, that it is hardy and requires little care, that it makes a striking appearance, that it can be grown in any locality, and that it is one of the few flowers with colors red, white, and blue, recommends it strongly *as our national flower.*

Columbine and honeysuckle are among the flowers that strongly attract the humming bird and every garden should contain these two vines, if for no other reason than to have the birds come around.

Coneflower

The coneflower is a perennial and is very hardy but it may be treated as an annual with successful result. It is *easy to cultivate and will thrive in almost any soil and climate*, though a more handsome growth will be attained if it is kept slightly moist. It perpetuates itself through selfsown seed.

The coneflower, or rudbeckia, may be propagated by cuttings which should be taken while the plant is dormant. It is very satisfactory for cutting and the pretty yellow shades add greatly to the variety of cut flowers.

Cornflower

The cornflower has several names, among them being "ragged sailor," "blue bottle" and "kaiser blumen." They are among the most attractive and graceful of the old-fashioned flowers.

The cornflower grows well on moderately rich garden soil. Seed should be sown in the garden in April or May and the young plants should be thinned to a distance of six inches between them.

Cosmos

Cosmos is a strong, hardy plant but if the flowers are to be at their best it *should have a rich soil in which to grow.* In favorable climates and with good soil, the plants will perpetuate themselves. The plants should be set a foot and a half apart.

Cosmos seed should be started in the house in March or April. The plant is a notable fall flower and often reaches a height of four or five feet under favorable conditions. Therefore, it makes a pretty background for small flowers and should be included in every garden plan as one of the flowers to receive appreciation in the late months when flowers are scarce.

Cosmos is most effective at a distance, and when planted in masses, or as long background borders where it can be viewed at not too close range, it is one of the most attractive of flowers.

By pinching out the terminals of cosmos and phlox they immediately make a second blooming growth in great numbers and beauty. Do not allow seed to mature that is not needed or the flowers will be small and poor in color.

Crocus

Crocuses require a rich, moist soil. The bulbs should be planted in the autumn to three times their depth, and these same bulbs taken up again as soon as they have stopped flowering and stored in a dry, airy room until the next fall when they may be again planted.

Crocuses are easily flowered in the house in the winter and may be planted either in earth, in glass bowls of pebbles and water to which has been added a little white sand, or in vegetable fiber, a special preparation for house plants. When grown in water, the water should be freshened every few days.

Crocuses, narcissi, tulips, and hyacinths should be kept in an airy room without a fire and where gas is seldom burned. They should be placed in the sunlight daily and when the buds have almost burst forth brought into the sitting room or dining room.

Plant fall bulbs early that they may get a good start in root growth before the ground freezes. The roots will then have a good lot of roots to start work with in the spring and the flower will appear much earlier than if the bulbs are not

planted until late. The latter part of September is not too early for this work.

The best of soils for bulbs is well rotted barnyard manure. This should be well worked into the soil before the bulbs are set out, and the ground should not be disturbed by cultivation. The soil should be finely pulverized and the manure should never be put on fresh.

Cyclamen

The plants of the pretty little *cyclamen should be given a rich, moist but well drained soil.* They require a moderate amount of sunlight but the soil should not be allowed to become dried out by the sun's rays. They are most satisfactory as a house plant.

Cyclamen really should be renewed every year in order to obtain the best result in the flowers, though it will grow year after year with little care. All roots for *house plants should be repotted every year.* This plant should not be subjected to extremes in moisture and drought nor in temperature. A temperature of fifty degrees is quite warm enough and very moderate moisture is all that is necessary.

Cyclamen should be repotted in August.

Dahlias

Dahlias require rich, moist soil. In the Southern States they may remain in the ground during the winter, but in the colder climate the bulbs should be taken up in the fall and stored in a dry place until spring, when they may be planted as soon as the ground is warm.

Dahlias should be trained to stakes or planted near a fence or other support. The canes are not very strong and a strong wind is likely to blow them over. In placing near a support they should not be deprived of sunlight or they will not thrive.

Dahlia bulbs should be looked over once or twice during the winter to make sure that none are shriveling from too much heat and dryness, nor starting into growth from too much moisture.

Dahlias should be kept down to three or four stems at the most. All other shoots should be cut off as fast as they appear, otherwise all the strength will go into the plant instead of blossoms. Big, bushy plants and no flowers are not desirable.

Dahlias will mature just as early if planted out of doors after danger of frost is over as if planted indoors

and set out in the garden early in the season. The change gives them a shock from which it takes them a long time to recover.

Dahlias are among the most satisfactory of the late summer flowers and *are most effective when planted among shrubbery.* They have such a wide range of color that it will be possible to complete almost any color scheme with them.

Daisy

This simple, attractive little flower is adapted both for the garden and as a house plant, and as a cut flower it has no superior. *It will grow in almost any soil,* but thrives best in moderately rich, slightly moist surroundings.

The giant daisy is propagated by seed or from cuttings, which, however, had better be rooted before cutting from the plant by bending them down and placing earth over them, and laying a stone on top, to keep the shoots in position. *The Shasta daisy is a member of the chrysanthemum family and is propagated by a division of the roots, by seeds or by rooting cuttings.*

Dianthus

Dianthus plants should be planted in a bed of well mixed turfy loam, leaf-mold, and well decayed manure. Good drainage should be provided as they are more likely to die from too much moisture than from not enough.

Dianthus seed should be sown indoors in March and the young plants transplanted as soon as the ground is warm. They should stand from six inches to a foot apart.

Young dianthus plants give the largest flowers but old plants are the first to bloom each season. The plants will remain green all winter if lightly protected by a mulch of straw, fodder, or leaves.

Dogtooth Violet

The dogtooth violet is really a lily and should be treated as a lily. It grows well among rocks in the garden and thrives best if the surrounding *soil is composed principally of leaf-mold.* It does not require much sunlight but a great deal of moisture. Dogtooth violets come in such a variety of color that every garden should have a place for some of them, at least.

Dragon's Head

The dragon's head grows best in a rich, light soil and when permitted to have plenty of sunlight. It is propagated by dividing the roots in the spring after the flowering season is over.

The dragon's head does not make much of a showing in the garden but the flowers *are beautiful when picked in quantities and put in a vase.* It should be planted in places where it can spread in order to have plants enough for a generous supply of cut flowers.

Dusty Miller

The dusty miller requires a light but fairly rich soil and it should be planted in a sunny location. It occupies but little space and should be planted in clusters to make an advantageous showing. When grown in clusters it is extremely pretty and three or four plants about three inches apart will make a pretty little clump.

Dusty miller is one of the plants that bloom all summer. It should be sown every few weeks from February to August. The plants are easy for the amateur to raise from seed.

Edelweiss

The Swiss edelweiss should be given a sunny position and a sandy loam on a stony foundation. It requires plenty of room and air. It is a very choice little plant and well worth the amount of care needed to cultivate it. It may be propagated by dividing the roots or by sowing seed.

Edelweiss is best propagated by seed as the division of the roots is not always successful. A few seed planted in the cracks of rocks where there is good sandy loam will usually germinate and flourish, though some gardeners find it best to plant the seed in shallow pans of sandy soil and leaf-mold, keeping the pans setting in a cool place and the soil moist.

Elephant's Ear

Elephant's ear is unequalled for a striking, tropical-looking effect. It is quite tender and the roots should be taken up every fall and planted out again in the spring as soon as the ground is free from frost. *It requires a rich soil,* and if given plenty of moisture will grow rapidly in a few weeks.

The *elephant's ear plants are excellent for planting in places where shade is lacking.* They will cast a shadow for several feet around and are very satisfactory when shade is needed for smaller plants. They should be watched closely for bugs and worms which will soon spoil the appearance of the leaves when once they attack the plant. Owing to the color and nature of the leaf, the bugs are easily detected and may be readily picked off.

Ferns

Ferns require an exceedingly moist soil, with a great quantity of plant food mixed in it. They can hardly have too much water.

An occasional application of well composted stable *manure will be beneficial to ferns.*

In selecting wood ferns for planting in the garden, choose the small, hardy looking plants. The small plants will stand the best chance of living and the large ones are very sure to lose their foliage after a few days, anyway.

Whenever possible, *in planting ferns,* give them the same sort of soil in which they grew naturally.

It is hard on them to have to readjust themselves to different soil and it will usually take some time for them to get a good growing start.

In cold climates ferns must be brought into the house during the winter, where they are apt to gather dust with no refreshing rain to wash it off. The pores become clogged and the plants droop from apparently no cause, while what they need is air. If they are placed in the washtub and sponged off with soft soapy water every two or three weeks, they will remain fresh and green.

The Boston fern is one of the most popular ferns. Its fronds grow to a length of several feet when soil conditions are right. It should have a light, spongy soil and only a moderate amount of water, never applying enough to make the soil muddy.

When a fern does not thrive, try putting a couple of raw oysters under the dirt very close to the roots of the plant. The oysters will nourish the plant and in most instances it will grow like magic.

In preparing soil for ferns, mix one part of leaf-mold with one part of sand and two parts of turfy loam. This should be prepared a month or

six weeks ahead of planting time, and should be dampened and turned over once a week. The last week, add five ounces of bone meal and an ounce of soot.

Among the low-growing *ferns suitable for table decoration* are the following:

Adder's Tongue	Bulblet	Hart's Tongue	Oakfern
Beech	Cliff break	Maidenhair	Polypody
Brittle	Hairy Lip	Moonwort	Purple stemmed

Feverfew

One of the cleanest-growing and most satisfactory of old-fashioned posies is the featherfew, or feverfew. It is commonly listed in the florists' catalogues as an annual but it will live through severe winters and remain green from one season to another.

Feverfew is self-sown each year from the seed of the previous season's production, and its blossoming season is long as three or four crops will be produced each season. It is a very valuable plant in a garden when continuous bloom is desired. *It transplants very readily.*

Forget-me-not

The dainty little forget-me-not is an excellent little plant for use as an edging or for filling in spaces

among the shrubbery. It can be taken indoors in the fall and kept as a house plant all winter with very pleasing results as a *table decoration.*

Forget-me-not seeds should be sown in the spring in a warm sunny place. These plants love *a cool, moist soil* with moderate fertilization. They are very satisfactory planted as a border flower.

Forsythia

Forsythia is an easy growing plant. *A liberal quantity of bone meal or other phosphate should be applied to the roots in the fall* in order to produce large clusters of flowers the following spring. The foliage is not unusually beautiful and the plants are cultivated for the flowers alone.

Every garden should have a corner for forsythia or golden bell. This is a very early blooming plant and its yellow flowers receive much appreciation, coming, as they do, before very many flowers are out. The plant requires a rich, loamy soil in order to make its best growth.

Forsythia should be cut back severely, to within a few buds of the main branches, *as soon as the flowers fade.* This pruning throws the strength

of the plant into the main branches, which in turn feed the new branches the following spring.

Forsythia may be successfully propagated from cuttings. The shoots should be buried in sandy loam, kept moderately moist and somewhat warm, and the roots will soon appear. Cuttings may be made from prunings, though the tender tops and most of the foliage should be removed.

Four-o'clock

The four-o'clock is a pretty garden plant for the Southern States. *The seed may be sown in a hotbed in February and set out in April.* Owing to the great variety of colors, and the ease with which it is grown, it is a much desired outdoor plant.

The four-o'clock is not exacting with regard to soil conditions, though it thrives best where there is good drainage. Lack of fertilization will produce an abundance of flowers but not much foliage. As the plants are grown for the flowers, however, which open at about four o'clock in the afternoon, foliage is not at all necessary.

The four-o'clock is self-perpetuating and plants will come up year after year when once they have been started. The odor is very fragrant.

Foxglove

Foxglove requires a deep, rich soil. The seed should be sown fresh every year in May in the open ground, but transplanting will benefit the plants.

In changing the plan of the garden, *do not move foxglove, gaillardias, or sweet william after the third week in September.*

Freesias

The best fertilizer for freesias is composed of loam, sand, and leaf-mold. A little well-rotted stable manure may be added but it should first be sifted, as the soil should be fine and soft.

Freesia bulbs potted in July will bloom soon after Christmas. The bulbs should be covered to a depth of an inch and a half and should be an inch and a half apart in the pots. They should be kept cool and moist for six weeks, when they may be gradually brought to the light.

Freesias will need no more watering after the stems and leaves die down. They should be placed in the open sunshine so that the bulbs may become thoroughly ripened before storing away for the next season's planting.

Fuchsias

Fuchsias are not satisfactory as a winter house plant, though sometimes they will flourish. The proper place for them during the cold months is the cellar, where they should be set in their own pots, and given just enough water to prevent the soil from becoming too dry. They should be kept in the dark until March, and should not be in a warm spot.

Fuchsias are very tender plants and require careful treatment. They had best be grown under glass during the early spring and may be planted in the garden after the soil has become thoroughly warmed, where they may remain until the leaves fall. When taken indoors they should be kept in a dry, dark place until March and should then be brought to the light and given a little water occasionally. *They will thrive in ordinary garden soil.* All pruning should be done in March before the sap rises.

Fuchsias may easily be grown from cuttings. The best method of rooting the cuttings is to bend the branches to the ground, cut a notch in the stem near a joint, and bury the stem in sand, holding it down by means of two little wooden pegs.

Gaillardia

Gaillardia may be propagated from seed grown in the open ground or by sowing the seed in a hotbed and transplanting the seedlings to the ground as soon as danger of frost has passed. The plants should stand about twelve inches apart.

Gaillardias require a fertile but light and well drained soil.

Where *gaillardias* are growing in the garden, *try making cuttings from them for plants for winter flowering*, or keeping the plants over to set out next spring. In the hothouse, cuttings can be made from these plants early in the spring, giving an additional stock of plants for bedding out.

Gaillardias have a profusion of flowers for a very long period and are well adapted for mixed borders. They keep fresh a long time when cut if the water is changed every other day.

Gardenias

Gardenias are not difficult to grow, regardless of the high prices asked by the florists. *They require only moderately rich soil*, an abundance of moisture,

and plenty of sunlight. In the South they stay outdoors year after year and grow to be small trees, but in the North they should be potted in large bucket pots, to give plenty of room for the roots to spread, and should be brought indoors in the fall. In planting out the next season, plant the bucket with the plant.

Gardenias are really more satisfactory as garden plants than as house plants as the extremely fragrant odor becomes rather pungent when in a close room. The flower is very delicate regardless of its heavy waxlike appearance, and turns brown where bruised.

Gentian

The gentian is a more or less fickle plant. It grows and flowers successfully at times under certain conditions, while at other times under the same conditions it not only refuses to flower but refuses to attain a good growth as well.

The gentian is most likely to thrive in a rich, loamy soil, which has some stones in it, and which is very moist. If the plants are protected in the winter by a pane of glass, they will be benefited.

Geraniums

Geraniums require a light soil in order to produce beautiful flowers. A very rich soil will make leaves but will produce no flowers. They should be given plenty of water and kept slightly moist all the time.

To start geranium plants for winter blooming break off slips from the old plants in August and put them in the ground by the side of the old plant. Let them remain there until the weather begins to grow cool, then pot them and take them indoors and place where they will get plenty of sunlight.

The dead flowers should be removed from the *geranium* plants immediately upon their beginning to droop. This will *encourage further blooming of the plant.*

For fresh, vigorous plants, slips should be taken from the old plants, but a few plants of great growth will be much appreciated, hence *some geraniums should be kept in pots the year round and frequently cultivated and fertilized when not in bloom.*

Geranium cuttings can be rooted by keeping them in a glass of water, but a little sand in the bottom of the glass will be helpful.

The average woman will find that *eight or ten geraniums of various colors will give her a great deal more pleasure as house plants than almost any other flower.* They will bloom profusely, give plenty of color, will stand neglect, and will not die if a light frost nips them or if she should forget to water them, and they are seldom troubled by insects of any kind.

The quickest and best method of rooting slips of geraniums, nasturtiums, and other plants is by placing them in a glass of water in a sunny spot. The roots will start in a few days and they should then be planted in soil.

A geranium bed may be started at little expense by purchasing in the fall one large full-grown plant such as is usually considered past the prime of usefulness, and taking off small slips to plant in individual pots. The slips should be made from the new growth and each slip should have one or more joints from which the roots will sprout. Caring for them during the winter will not be difficult as they require so little attention, and by spring a dozen geraniums will be ready to transplant to the window boxes and flower beds at very slight expense.

Geraniums for winter flowering should be potted in June and should be set in the pots in which they are to remain during the blooming period. They should be kept in the open until the days begin to grow too cool for them and should be gradually brought to a warmer temperature or they may wither from heat.

Geraniums, fuchsias, begonias, and roses slipped in the fall to make plants for bedding in the summer will insure good plants at little expense and not a great deal of care during the winter months. Shallow dishes filled with sand and water should be used for starting the roots. When the roots are strong and firm, earth should be added gradually if in a pot, or the slips may be transferred to a pot if they are rooting in a glass.

Geraniums will do better if slips are taken from new shoots. There should be a joint, and preferably two, on each slip as the roots start from the joints.

Gladiolus

Gladiolus bulbs should lie dormant in a dry place in the cellar all winter and be planted in the open ground in the spring. Or they may be planted in

cold frames in March when they will bloom as early as May. Under ordinary circumstances, they bloom in June or July.

Gladioli require a rich soil for profusion of blossoms, though they will flourish in almost any soil.

Gladioli should be staked when the plants have reached a growth of from twelve to eighteen inches, or the wind will be likely to blow them down. Even a heavy rainstorm will beat them down and wash up the roots which are not deeply covered.

When digging gladiolus bulbs, save the small bulblets for future planting. In time these little bulbs will make flowering bulbs.

For a succession of gladiolus flowers, plant the bulbs every two weeks until August first. After that time it will be useless to plant as the cold will kill the flowers before they mature.

Three times as many bulbs will come from gladioli planted in June than from those planted in April. It seems that Nature, knowing that the late plants will not mature seed, provides more abundantly by multiplying the bulbs.

To get the best out of gladiolus flowers, cut them when the first flowers open on the stalk and place in cold water. Change the water every other day. Every flower on the stem will open and the stem will last for ten days or two weeks.

Gladioli planted among the roses the latter part of June will flower in September *when the roses have begun to dwindle away.*

If gladiolus bulbs are kept in a very warm place during the winter they are likely to become dried out and there will be little vitality left when they are set out in the spring. The result will be a very poor crop of flowers and the bulbs may not even root.

Godetia

The godetia requires a light, sandy soil and will not thrive in soil that has been heavily fertilized. It is a delicate little plant and requires frequent cultivation, but its beauty well repays one for the attention which must needs be given.

If godetia plants are set among the china asters, they will bloom early and be out of the way before

the asters come to overshadow them. *They should be planted in clumps* as the delicate shell pink shade will not show to advantage in single plants.

Gypsophila

Gypsophila is charming as a cut flower. Its grace and lightness have given it the name of "Baby's Breath," and it will add distinction to what would otherwise be a very ordinary selection of plants.

Gypsophila should be given plenty of room for its full growth and development. It grows rapidly and in three or four years a bush will grow to five or six feet across and three or four feet in height. Bare spaces surrounding it may be filled in with annuals until the gypsophila has attained its growth. It is usually propagated from seed, though cuttings may be made.

Gypsophila will grow under almost any soil conditions, and while sunlight is beneficial, it will grow in partial shade. It received its name from a Greek word which means "lover of gypsum or chalk," and was perhaps first found on rocks.

Heliotrope

The old-fashioned little *heliotrope* is a delicate little flower and *should be given a fairly rich, well-drained soil.* It makes a pretty border plant, and if all dead flowers are clipped off it will bloom until frost cuts it down.

The tall heliotrope grows to be three or four feet in height and is most effective when planted with the shorter variety at its base. It *may be propagated by cuttings* in the early spring or in the fall after the flowers have ceased, though spring cuttings will be much easier to root.

Hibiscus

The hibiscus thrives best in the South and when grown in the North should be planted in large wooden tubs that they may be taken indoors in the winter. *The soil should be rich and friable and the plants should be frequently watered.*

The hibiscus is remarkable for its large, brilliantly colored flowers of great variety. The leaves, too, are beautiful, and the foliage would be worth cultivating if there were no flowers.

The hibiscus may be propagated from cuttings, or from seed, though cuttings are more satisfactory. Plants grown from seed will not bloom the first season, and often do not bloom until the third season. The plants do not require pruning and cuttings should be carefully taken.

Hollyhock

That old-fashioned perennial, *the hollyhock*, has never lost favor. The plants *should always be grouped together or planted in rows*, to get full benefit of their beauty, and never planted singly

Any ordinary garden soil will suit the hollyhock, and too much fertilization is not advisable, otherwise the plants will run to foliage rather than flowers. Bone meal will be beneficial if applied to the roots in the fall and it will have a good effect on the size and color of the blossoms.

Hollyhock seed should be sown in April or May, not later than June, *to flower the next year*. Each plant should have a foot or more of space on each side to allow for full development. They will flourish in almost any soil and require little care.

Seed sowings of hollyhocks should be made every year. The flowers on young, vigorous plants are far superior to those grown on old stock.

Seeds of perennials, such as *hollyhock, columbine, larkspur, foxglove, and sweet william, may be planted in the open garden in the fall in the warmer sections of the country.* They should be protected during the winter by a covering of straw.

Hollyhocks seem to like to have their foliage sprayed at evening during the hot, dry weather. The wind is likely to blow down plants in exposed positions *unless properly staked.* To use them as a background for other flowers or to plant them against a building will be best for them.

Liquid manure applied to hollyhocks throughout the season will produce massive flowers, though they will keep right on blooming with little fertilization.

In order to have large blossoms of hollyhocks late in the season cut out all the flower buds for the first few weeks. All the strength will then go into the plant and the later flowers.

Hollyhocks will not bloom the same season the seeds are planted. It takes a second season to mature the plants for blossoming.

Honesty

Honesty, or lunaria, was a great favorite in old-fashioned gardens a generation ago, and owing to the ease with which it can be cultivated *should have a place in every list of old-fashioned flowers.* It will grow in sunlight or shade, in rich soil or poor, and comes up each year from self-sown seed.

Honesty pods are very pretty when dried and taken indoors for winter decoration. There are several varieties and all are attractive.

Hyacinths

Hyacinths require rich, moist soil, and the soil should be moist all the time, though not sodden.

Hyacinths, narcissi, tulips, and crocuses should be planted in masses when planted out of doors. Only in this way can the best effect be obtained, though to dot a few bulbs here and there on the lawn will be a pleasing little surprise in the spring-time as they come up one by one before the grass is cut.

Tulips and Dutch hyacinths are best adapted for design bedding. Solid bright colors in contrast should be planted together, such as a bright red and a deep yellow, dark red and white, etc.

Bulbs should be set out in the fall, not later than the first of November, for spring blooming. They should be planted twice or three times the depth of the bulb in rich compost, and the beds covered over with leaves to keep them warm.

The grape hyacinth is an unusually pretty flower, yet it is not so much grown as the other varieties. *When naturalized in colonies it remains undisturbed for years.* Used as an edging it is most charming.

A prepared fiber may be purchased for growing hyacinths and other bulbous plants. It is clean and light and bulbs kept sufficiently moist, not wet, thrive well in this fiber. It is particularly advised for hanging baskets, and for city people who experience difficulty in obtaining good soil.

Hyacinths, tulips, daffodils, crocuses, and narcissi should have their bulbs taken from the soil when they have stopped blooming and stored away

in a cool dry place until fall when they may be replanted with very successful results. In planting, all the small bulbs will, if broken from the main bulb, start new plants, though if a cluster of blossoms is desired these small bulbs should remain attached to the parent bulb.

A shallow bowl filled with pebbles, sand, and water will make *a beautiful foundation for hyacinths and other bulbs.* The roots will be white and curling and almost as pretty as the blossoms.

To force bulbous plants, such as hyacinths, narcissi, and daffodils for Christmas blooming, pot them in August and set in a cool, damp place until six weeks before Christmas. Then bring to the warmth of the strong sunlight behind window glass in a slightly heated room.

The best bulbs produce the best flowers.

When potting hyacinths, daffodils, tulips, crocuses, etc., imbed them in the earth, water well, and set them away in a cool, dark place. They should not be disturbed again until the roots have acquired good growth and no water should be added as long as the soil remains moist. When the pots are full

of roots, shoots will appear and the pot should immediately be transferred to the light, gradually giving it a little more light all the time until it is finally placed in the bright sunshine. Eight weeks is usually the amount of time required to produce *flowers for Christmas blooming*, but to make sure of having blossoms at this time, a succession of bulbs should be planted, say every four days.

To produce flowering bulbs very early in the spring cover with a mulch of leaves and over the leaves sprinkle a light covering of manure, just enough to hold the leaves in place, and lightly cover them. This will keep the ground warm and the bulbs will become warm and will start to sprout before the sun has warmed the surrounding surface of the earth, and when all danger of frost is past the bulbs will grow rapidly and flower soon.

October is the best time for planting narcissi, hyacinths, and tulips. They may be planted any time before the ground freezes but if planted in October they have ample time in which to establish a good root system, which is the secret of getting fine flowers.

The best soil for bulbs, hyacinths, narcissi, and tulips is that which was well manured the previous spring for summer flowers. Any manure added in the fall should be well rotted and it should be spaded in thoroughly and deep.

To mulch the daffodils, tulips, hyacinths, narcissi, and other bulbs well with manure before the ground freezes and while the bulbs are perfectly hardy will give them protection and prevent the ground heaving. If the ground heaves the bulbs will not become well rooted and the size and quality of the flowers will be poor.

An ideal *soil for use in growing bulbs indoors* is made of one part sand to three parts rich soil. The pots should be well drained by placing small stones in the bottom.

Hydrangeas

Hydrangeas are beautiful either as a hedge or as individual plants. They will thrive in almost any soil, but should have cultivation once or twice a season and the application of a little liquid manure at each cultivation.

White hydrangeas may be colored blue by digging a hole near the roots and pouring into it a little indigo blue.

Hydrangeas should be pruned immediately after they cease blooming. *In the South during the winter* the tops should be protected by placing over the bushes a straw or brush covering. The flower buds form in the fall and the cover will keep them from being killed by the cold of the winter. *In the severe climates*, the plants should be taken up and carried to the cellar, or placed in the greenhouse.

Cuttings should be taken from hydrangeas in August and should be chosen from growth which has not flowered. The cuttings should be buried about two thirds the length in sandy soil, and each cutting should have at least one good, firm joint.

Iris

The Japanese iris requires a rich soil and plenty of moisture. It should be taken up every two years and the roots divided and more fertilizer added. To start plants from seed will take a long time as this is one of the plants which do not blossom the first season when grown from seed.

Manure should never be applied direct to the roots of the iris. It should be applied in liquid form or worked into the soil at a short distance form the roots.

Jack-in-the-Pulpit

The wild flower, jack-in-the-pulpit is a much appreciated plant when cultivated. It is one of the marshy plants but will thrive either in low, marshy land or in the water. The flowers of this plant catch and hold securely bugs and other *insects* and thus aid in destroying plant enemies.

Jessamine

Jessamine requires a loamy soil to which a little leaf-mold has been added, and a little sand mixed with this heavier soil will help in insuring drainage.

Much of the success in growing jessamine depends upon the pruning. It should always be pruned in the springtime after the flowers are gone. It will then have the whole season in which to mature new shoots for the next winter's flowers. If it is pruned in the fall, the shoots which would have borne flowers will be destroyed.

Lantana

The name commonly applied to lantana is Indian nettle. This is a tender shrub and it can be trained in the form of a tree or left to grow as a bush. *A loamy soil, mixed with leaf-mold and compost and a little sand, is the best soil* for this plant.

Cuttings from lantana should be made in the spring or fall and should be inserted in sandy soil, kept fairly moist and warm.

To train a lantana plant to tree form, pinch off the lower branches as fast as they appear, leaving the strength of the plant food to feed the upper branches. *If a bush is desired,* the central buds, or top, should be pinched off that many side shoots may appear. The earlier this is done, the prettier and more regular the bush will be.

Larkspur

Larkspur seed may be sown either in the fall or spring, in the fall, preferably, so that germination may take place early in the spring. The plants should be thinned to about a foot apart. They thrive best in a cool, moist soil.

The dwarf larkspur should be used for borders,

while the tall variety may be used among the shrubbery as a background for other low flowers, or be cultivated for cutting.

The withered stems of larkspur should be cut away as soon as they appear, in order *to keep the plants flowering until late in the season.*

Larkspur, hollyhocks, iris, and perennial poppies should be covered in the fall with a good coating of manure or other litter to a depth of three or four inches. This will hold the frost in the ground and keep the plant from alternately freezing and thawing; in cold climates the manure will protect the plant from freezing to a depth that will cut off its water supply.

If lilac blossoms are waxed just after the blossoms have opened, they may be kept a long time in the natural color. The flowers should be cut in the early morning and not be allowed to wilt before being waxed.

Lavender

Every home should have its lavender bush, either in the garden or in a pot. The foliage is orna-

mental and the flowers are very fragrant and nothing gives a sweeter, more delicious odor to clothing when packed away with it.

Lavender bushes thrive best in light, sandy soil and a great deal of sunlight, though they are not particular with regard to soil. *They may be grown from seed or from cuttings*, which should be taken in October and should comprise a piece of new growth attached to an older stem.

Lavender leaves should be gathered on a dry, sunshiny day in midsummer, preferably as late as August, and should be hung in a cool dry place for several weeks before they are ready for use.

Lilacs

Lilacs and other shrubs which make their buds one season for the following season's blossoming *should be pruned within a month after they stop blooming* to promote fine blossoms. Lilacs should not be pruned very frequently.

The common lilac succeeds well in trying locations. It may be used as a hedge with excellent results, or as specimen plants about the lawn. It grows into a graceful shrub or high hedge with very little care.

A bunch of lilacs has its place in every garden, however small. They require little cultivation, an application of manure once a year being sufficient to keep them going, and they will thrive somewhat even without the annual application. They are among the early flowers and much appreciated.

Lilacs should not be pruned directly after blooming, but should be left alone until the spring of the following year. They do not need to be covered during the winter even in cold climates.

A hedge of lilac is most beautiful even after the flowers have ceased. It should be kept pruned as closely as privet, and small flowers or shrubs should be planted near to hide the bare lower branches

Lilies

Lilies-of-the-valley require a rich, leafy mold, plenty of moisture, and little or no sunlight. The bulbs should be planted in the fall and covered over well with soil and leaves.

A cluster of bulbs of the lily-of-the-valley should always be separated and set three or four inches apart. They will multiply rapidly in one season, hence should be given plenty of root room.

The lily-of-the-valley makes an excellent house plant for the winter months. By taking it in at intervals during the winter a succession of flowering plants may be kept up. The flowers will last several weeks.

Where there is a plot too shady to grow the average flower set out clumps of the lily-of-the-valley and between them plant slips of running myrtle. These will grow rapidly and soon cover the ground, making a most beautiful bed. Even after the lily has stopped flowering the ground will have an attractive covering.

Tiger lilies are easy to grow, requiring practically no cultivation and little fertilization. When once started, they will come up every year. The bulbs may be planted either in the spring or fall with equally good result. A small piece of a bulb with a bit of root attached will grow and flourish.

Tiger lilies attract both the birds and the butterflies, and planted as a background for other foliage they are at their best. The stem can be cut off with the buds but half grown and they will mature and come into flower in the vase and will last from ten days to two weeks if the water is changed frequently.

Madonna lily bulbs should be planted early in September, though most bulbs should not be planted until a month or six weeks later.

Madonna lily bulbs are less likely to rot in heavy soils if surrounded with a little sand and laid on their side.

Calla lilies require plenty of water when flowering and should also be given a good supply of liquid manure once or twice during the season, other than the first fertilization.

Roses and lilies should not be planted so close that the branches will come in immediate contact, or the *rose thorns will lacerate the branches of the lilies.*

October is the time for planting irises or flag lilies. They will flourish in the shade or sunshine, in rich soil or poor, and will even grow on rocks with the scantiest of soil.

Irises will not bloom the first season after planting, hence they should be placed in a permanent location.

Lobelias

For borders, for baskets, and for pots there is nothing prettier than the lobelia. The seeds germinate

quickly and may be sown out of doors in the early spring where the plants are to grow. If sown indoors, they should be sown in dirt bands or paper cups and the cup or band transplanted with the seedlings. The plants should not be set permanently nearer than eight inches apart.

The lobelia requires a rich, somewhat moist soil, and liquid manure applied to the surface and worked in while the plants are in bloom will greatly improve the size and coloring of the flowers.

Love-Lies-Bleeding

Love-lies-bleeding, or amarantus, seed may be planted out of doors where the plants are to grow, but as the plant is successfully transplanted, the seed may be planted in the house early in February. Outdoor planting should take place in March or April, according to the severity of the weather, as the plant *requires a warm, moist atmosphere.*

Love-lies-bleeding is cultivated for its foliage, which is unusually beautiful if the plants are properly cared for. The dried blood of cattle or sulphate of ammonia applied to the roots will create rapid growth and beautiful leaves.

Lupin

The lupin is a hardy annual and requires a rather rich soil and plenty of moisture. It will thrive best in a somewhat shady location though a moderate amount of sunshine will not be harmful. When it is once established in a garden, it will perpetuate itself for years.

The lupin can be propagated from seed or from cuttings. Seed should be sown where the plants are to grow as it does not stand transplanting well. When rooting cuttings they may be taken from the plant and inserted in moist sand, or the branch may be bent to the ground, a notch cut in it near a joint, and left there to root. Either method will prove satisfactory.

Magnolias

Magnolias require a rich loam and plenty of moisture. Also plenty of sunlight if they are to bloom profusely. There are many varieties, but the most beautiful of all are the huge trees which grow in the swamps of the far South and which have creamy white blossoms with petals eight and ten inches in length, and two and three inches in width. A tree

planted in a naturally moist part of the garden will thrive with little attention.

Magnolias bloom in the spring and early summer and give excellent results when planted among other flowering plants which do not blossom until later in the season. In watering, the water had best be applied by means of a pipe driven into the ground near the roots and the water poured down it. In this way the roots will receive the moisture and feed it to the rest of the plant.

Maltese Cross

The maltese cross requires plenty of sunlight and a well drained, moderately rich soil, though it will grow in almost any soil. Planted in groups, this plant is most effective and the plants should be set close together.

The maltese cross is propagated either by seed or by dividing the roots of fully matured plants. The division should be made in the spring.

Marguerite

Marguerites will grow in any soil and when once started they will come up every year from self-

sown seed. Seeds sown in September make good plants for the next season.

Marguerites should be staked when they have grown to be ten or twelve inches in height to prevent the wind blowing them over or the rain beating them down, but other than staking, they will require little care. They will live through the winter without covering in the South but should have a light covering applied in severe climates.

Marguerites are most effective when bushy, and in order to attain this bushy appearance, the center shoot should be pinched out as soon as it appears.

In taking cuttings from marguerite plants for growing other plants, neither the very hardy nor the very weak shoots should be selected, but cuttings of medium vigor. All flowers and buds and all but two or three leaves of the cutting should be pinched off before planting.

Marigolds

There are two distinct types of the marigold and each type has a great number of varieties. The French marigold is compact and regular and the

African marigold has a spreading habit. The former is best suited for bedding or for borders and the latter for herbaceous or shrubbery borders.

Marigolds will be benefited by transplanting. If the seed is sown in a hotbed or cold frame very early in the spring and the young plants transplanted first to pots which confine the roots of the plant and check it, and after a couple of inches growth, again transplanted, the increased food supply will promote a splendid growth. *The soil should be rich* and the plants kept fairly moist.

Marjoram

Sweet marjoram belongs to the origanum family. It is a very pleasing little plant which grows about ten inches in height and which will thrive in a rock garden. *The soil should be light and sandy.*

The leaves of sweet marjoram should be picked in the heat of summer and kept in a cool, dry place for drying out before using. If taken from the stem they will dry more readily. *When cuttings are made* they should be taken at the season when the plants are not growing and should be put into sandy, damp soil for rooting.

Mayflower

The mayflower grows wild in the Southern States. It *requires light soil mixed with leaf-mold, very little sunlight, and plenty of moisture.* It is very successfully grown in the rock garden and requires practically no care after once having a good start.

Mignonette

Every garden should have mignonette in plentiful supply. The seed can be sown at any time and if successive plantings are made every three weeks, it will last until late autumn in the out of doors. The last sowing should be made the latter part of August.

A pot of mignonette for the dining table will be much appreciated in the dead of winter. Seed should be sown in July.

The mignonette requires rich, friable soil, plenty of moisture, and frequent cultivation to conserve the moisture. The ground should be well drained for if it becomes sodden the stems of the plant may rot.

Mint

Large sprigs of mint may be placed in a jar of water where they will not only remain fresh but *will actually grow.* Roots will sprout and practically no attention need be paid to the plant except to add water and to place it in the sun occasionally.

When mint is once started in the garden it will perpetuate itself yearly, and should, therefore, be planted in a spot which will not be needed for other vegetation. To give fragrance to the air in the garden, there is nothing more pleasing, and the leaves make extremely pretty foliage when used as low-growing shrubbery.

Mistflower

The mistflower requires a rather rich soil if it is to thrive. Its roots will multiply rapidly and the plant has a long life. It may be propagated by the suckers which shoot up from the lower stem, these being inserted in wet sand for rooting, or cuttings may be taken from the upper branches.

Do not give up the *mistflower* for dead because it shows no sign of life until late in the spring.

It lies dormant a long time but it will appear eventually. *A permanent stake should be driven in the ground near the roots when it is planted in a large garden.*

Mistletoe

The mistletoe is of parasitic growth but it is much desired for decorative purposes at Christmas time. It grows slowly and has a bad effect on the tree on which it feeds, hence it should be kept from choice trees.

A little moss tied over the cracks in which mistletoe seeds are placed will prevent the birds eating the seeds. Birds find the seeds very quickly and their disappearance may not be noticed for some time, if at all.

The male and female plants of the mistletoe grow on different plants, and fruits, or berries, are not borne on the male plant. *To establish the mistletoe on a tree*, take the fruit in February or March and rub the seeds lightly into the crevices in the bark. It is usually propagated by birds carrying the seed from one tree to another.

Mock Orange

The mock orange is a beautiful ornamental shrub with very fragrant flowers. It *thrives best in a rich, loamy soil* which is kept rather moist at all times.

When the flowers of the mock orange fade, the branches on which the flowers appeared should be cut back to the point from which young shoots are starting. Cuttings may be made from these prunings and they should be inserted in sandy soil and kept in a warm spot.

Monkshood

The monkshood thrives in ordinary garden soil and in either a sunny or a shady location. It is an excellent flower for planting on the north side of a house, and requires little care. Indeed, when the plants are thriving, and the flowers are in good form, they should be left undisturbed for several years at a time.

Monkshood will thrive for five or six years without replanting, as the seeds fall to the earth and are covered by wind-blown dirt. It is best, in order to secure the best growth, to replant every two or three years, and this may be done either by

planting new seed and carefully tending the seedlings or by dividing the roots of older plants. After five or six years, the old roots should no longer be used, but new plants should be started.

Black blight on monkshood can be gotten rid of by spraying thoroughly and frequently with Bordeaux mixture. The leaves and buds should be sprayed when the stalks begin to turn yellow around the blooming period.

Moonflowers

Do not fail to plant *moonflowers* to have a showing of beautiful flowers in the late afternoon and at night. These vines are very *easily grown from seed, which should be soaked for twenty-four hours in lukewarm water before sowing.*

The moonflower vines should be given a rich moist soil, and the soil should be well enriched before the seed is planted. Little or no cultivation should be given as the roots are very near the surface and are likely to suffer from disturbance.

Nasturtium

No other annual will produce such a profusion of flowers for so long a time as the nasturtium. It can

be grown as a vine or as a short bush flower with equal success. It never flags through the hottest weather and has a wide range of colors.

Nasturtiums flower best on thin soil, but if a wealth of leaves is desired, the soil must be enriched. The plants should not be kept very moist or they will rot off, especially if standing too close.

Nasturtiums may be started in the house in paper cups or dirt bands and transplanted to the out of doors as soon as danger of frost is over. When planted in the open the seed should be sown an inch deep and the seedlings thinned to ten inches apart.

Nasturtiums make beautiful winter pot plants, and the trailing nasturtiums may be planted in hanging baskets with great success.

Nasturtium flowers appear within two months from the time of planting the seed. A bed of one hundred square feet will produce about a thousand blossoms per day.

Try planting dwarf nasturtiums about three inches from sweet peas along both sides of the rows. The

nasturtiums shade the ground and the sweet peas seem to do better than when grown alone. As nasturtiums require little nourishment, they will not be checked by the drain made on the soil by the roots of the sweet peas.

Grow nasturtium seeds for sprinkling among pickles when putting them up for the winter. The leaves of the nasturtium among the pickles will give them a nice green color and a very pleasant flavor.

Nemophila

Among the flowers which have a long blossoming season is the nemophila. All species may be propagated from seed, though plants will form from cuttings. Seed should be sown in the garden in April where the plants are to stand, and for early blooming planted again in August and transplanted late in the autumn into pots.

The nemophila loves a rich, moist loam with some shade. The strong sunlight will wither and parch the leaves and kill the tender young buds of flowers. As a cut flower for small vases, the nemophila is most satisfactory.

Nicotiana

The nicotiana is a hardy annual and *will grow in fairly rich soil.* It requires shade as the flower petals will close when the bright sun shines on them. It perpetuates itself from seed, and it also transplants very readily.

When the *nicotiana* plants have acquired a good growth, *the lower leaves should be picked off to prevent the plant from crowding* other plants. The plants should be set not nearer than twelve inches.

Oleander

When the oleander has grown large and unwieldy and the growth is rough and homely, cut away all the old branches, leaving nothing but stubs appearing above the ground. In a short while new branches will appear which will produce much finer flowers than the old branches would produce.

The oleander does not require an extremely rich soil, though a little stable manure applied to the roots in the fall will strengthen and nourish the plant. *Basic slag or bone meal* worked into the soil near the roots *will give excellent color and growth to the flowers.*

Orchids

Orchids are beautiful flowers, but difficult to grow. *They require a soil of peat and loam and should be kept in a cool, moist spot.* They are very delicate. They do not like to be disturbed and should be planted very early in the fall and left alone. A little sand mixed with the soil will aid in securing good drainage.

Palms

Palms require a loamy soil, well drained, and enough water should be given to keep the soil always moist—not moist at times and dry at others. Palms do not require sunshine.

A little sweet milk added to *the water in which palm leaves are washed* will give a beautiful gloss to the foliage.

A piece of raw beef chopped fine and worked into the soil around palms, ferns, and rubber plants will give nourishment to the plants and there will be a marked increase in their size before very long.

A tablespoonful of castor oil poured on the ground around the roots of palms and ferns, once a month, will give them a rapid growth, and keep them look-

ing fresh and green. If it is worked into the soil, it should be worked into only the first inch or so. The oil will help to conserve moisture and also gives the plant quite a bit of nourishment.

Palms and other foliage plants can be kept free from scale by washing the leaves with a strong yellow soap solution applied by means of cotton batting. The leaves should be well rinsed also. This will not only keep off scale but will keep the leaves free from dust and give them a chance to breathe fresh air, which they need.

Pansies

Pansies will thrive and flower in almost any soil, but a moderate amount of fertilizer will tend to increase the size of the flowers. The roots grow near the surface and should not be molested, hence liquid fertilizer will be excellent for applying if the plants must be enriched after growth has started. *Phosphate fertilizer should be contained in the soil for the benefit of the blossoms.*

If all the old branches are cut away from the pansy plants in midsummer, new branches will grow and produce *fine large flowers for the fall.* Fertilizer

should be applied at the same time to give the plants something to feed on for the new growth.

Pansies can be made to flower until Thanksgiving if given a southern location and protected from the east winds. A light covering of leaves may be applied, not too heavy or the sun's rays will not penetrate, or where the bed is small enough, a board may be placed over the plants slanting it by means of stakes. This board should always be in place at night and removed during the warmest part of the day.

As there are so many dark shades of pansies, the lighter colors should be planted in greater quantity than dark shades, otherwise there will not be *a very striking effect when the pansies are in bloom.*

Every garden should have a pansy bed. The plants bloom all summer and the more they are picked, the more prolific they become, producing a larger flower as the season advances.

For early outdoor bedding of the pansy, sow the seed in a cold frame in the autumn, September or October. In transplanting the young plants they should be given from three to six inches of space if they are to do their best.

Outdoor pansy beds should be covered for the winter with a mulch of dry leaves and over that stable manure. The plants will come up in the spring and bloom until midsummer, and if properly cared for, until the end of the summer.

Pansies for midsummer blooming will do better if they receive the sun only a couple of hours in the morning. Too much heat will cause small, puny flowers. Seed sown in June will produce *plants that will flower in the fall.*

Pansies should not be allowed to go to seed. If they do, the succeeding blossoms will be small in size and faded in color, and the plants will soon stop blooming.

Take a few pansy plants indoors for the winter. Given attention, *i. e.*, warmth, watering, and cultivation, they will keep right on blooming until Christmas time and sometimes even longer.

Peonies

When peonies are crowding out other plants, as they so frequently do, they should be trimmed by cutting off some of the outer branches and then tying the stalks together. In the middle of the

summer, the plants may be cut down considerably as they will by that time have acquired most of the vigor necessary to sustain bloom for the next season.

July or August, after the peonies have stopped blooming, is *the best time to fertilize*, as the growth of the plant will not then be interfered with from digging around it, and no harm can be done to the flowers. This is also *the best time for moving the roots to a new location*, as they will then have time to start growing afresh before the ground becomes chilled.

Peonies are among the most satisfactory of plants. The foliage alone is beautiful. They have a long season, and if planted in rich, well-drained soil will require very little attention beyond cultivating once or twice during the season, and covering with an inch of manure before cold weather.

The fall of the year is the best season for planting peonies. If set out in the spring the work should be done just as early as the danger of severe cold is over or they will not reward one with blossoms that season. When planting early in the spring, the soil should be well mulched with stable manure.

Peonies should be mulched with a good coating of manure or other litter in the fall and this coating allowed to remain on during the winter. This will tend to warm the ground and will prevent the plants alternately freezing and thawing, which is hard on any plant. This treatment will be beneficial for any hardy perennial, and particularly for *larkspur, hollyhock, columbine, iris, and perennial poppies*, and flowers will be produced much earlier the following season than if the plants are grown from seed.

When grown for the purpose of propagation, the peony ramifies more in light soil, but *when blooms are desired*, a well-drained clay subsoil, with the surface of rather rich loam, will be beneficial.

Peonies require an abundance of water at all times, but particularly when they are blooming are they very thirsty. Liquid manure will furnish an encouraging method of both watering and fertilizing them.

When peonies flourish but fail to bloom, the fault often lies with the way they are set in the ground. The crowns should not be set too deep or the blossoms will be affected.

Pepper Plants

Pepper plants require rich, well-drained but moist soil and frequent cultivation. They should be given plenty of fresh air and occasionally should be placed in the strong sunlight. The plants should be kept free from dust by sponging with a soapsud solution.

A pepper plant for the house during the winter months will lend a touch of color when all flowering plants refuse to blossom. These plants require sunlight and should be put in the sun for a little while each day.

Periwinkle

The periwinkle is a tender little plant but it grows and spreads rapidly and is self-perpetuating. The seed should be sown in a flat or hotbed and the young plants transplanted when about two inches in height. *It requires a rich soil and plenty of moisture.*

When planting periwinkles in rows, make double or triple rows and the effect will be very pleasing. *The plants should be set from six to eight inches apart.*

Petunias

Petunias are excellent as house plants or for filling window boxes. If staked, they will hold up their branches prettily, but even drooping over the side they will be graceful and attractive. Petunias have a long season and require very little care.

Petunias are not exacting with regard to soil and will thrive in almost any arable soil, enduring drought well and blooming in great profusion. They should be sown in a hotbed in March and transplanted to the open when the soil is warm enough. The seed of the double varieties requires more attention to prevent extremes of temperature and of moisture than the seed of the single flowers. A pane of glass placed over the seed will be helpful in preventing loss of moisture. In planting petunia seed in the open ground, do not cover with earth.

Phlox

The phlox will thrive in any ordinary garden soil and when once started it is self-perpetuating, sometimes from the seed, and, where the climate will permit, from root increase.

Phloxes are useful as window garden plants and as undergrowth for tall bare-stemmed plants. They should be sown out of doors as soon as danger of frost is over. They require very little attention.

The phlox transplants readily and if planted too thickly will *suffer from mildew*. Sulphur dusted over the plants will usually rid them of mildew.

To remove the seedpod and dead flowers of phlox will *insure their blooming throughout the season*.

When phloxes are used as cut flowers they should be put into a vase or jardinière large enough to support them. The flowers are heavy and are not attractive when crowded. They will last for days if the water is changed.

Pomegranate

The pomegranate not only bears beautiful scarlet flowers but also an edible fruit. It is a very hardy plant and requires little care. A loamy soil is best for it, though it will grow in the sandy soil of the far South and do well. It requires plenty of sunlight and a well-protected location.

The pomegranate was introduced into this country from Persia where it is a popular fruit. It may be propagated from cuttings, though little pruning is necessary.

Poppies

A sandy loam suits poppies best. Seed sown in the autumn and at intervals in the spring will make a long succession of flowers. *The seed should be sown thinly* and covered very lightly, and plants should be thinned to a distance of one foot.

California poppies, petunias, Shirley poppies, and sweet alyssum should always be sown where they are to grow and flower as they will not bear transplanting successfully. The Shirley poppy is particularly adaptable for cutting and some of these should be included in every garden; they are bold and brilliant, delicate and airy.

The poppy plants which bloom most profusely are those which were sown in the fall of the year, or during the very early spring months while the earth was cool and moist.

The Iceland poppy should be sown outdoors in September for early spring flowering. Seed planted in April where the climate will permit will produce

blossoming plants in August of the same year. Grown in clumps these plants make a splendid showing.

Portulaca

Portulaca will grow anywhere and under any soil condition. In fact, so prolific is its growth that it has almost become a weed in warm climates.

Portulaca seed will not germinate without warmth, and as it should be sown out of doors, there is no need of sowing until quite late. *Portulaca requires little care* and there is no other plant of low growth more pleasing. This plant will perpetuate itself by self-sown seeds.

Portulaca can be best transplanted when in full growth and if the plants are blooming profusely they will not be harmed by being moved.

When looking for edgings, rockwork plants, or something to fill in gaps, try portulaca. It makes beautiful foliage as an undergrowth for tall plants and will flourish under most adverse conditions.

Pot Marigold

The pot marigold requires a rich, light soil, though it will grow in almost any soil. The plants

bloom freely and earlier than the marigold, and there are both single and double forms of the flower.

If pot marigold seed is sown in the open ground very early in the spring the plants will bloom early in the summer and will continue to bloom until late in the fall of the year. The colors of the flowers range from ivory, through the many shades of yellow, to deep orange. Seed sown in the hotbed during the first week of April will be ready for transplanting the middle of May.

The dried flowers of the pot marigold give an excellent flavor when put in soups or added to stewed meat while cooking. This will furnish a novelty in flavoring.

In hot climates where the soil is not very rich nor very moist, the pot marigold seed should be sown in May as the plants will not grow so rapidly as those started in June under more favorable conditions.

The primrose is equally satisfactory as a house plant or planted to form border lines or solid beds. It blooms from early spring until the frost falls on it and the height averages eighteen inches.

Primrose seed should be sown in an open border or in a cold frame in the spring. When transplanted, the plants should stand about a foot apart and should be set in rather *thin or sandy soil.*

If the seed of primrose is planted in July and the seedlings transplanted to the cold frame when the weather grows cold, *they may be kept during the winter months* and set out again in the garden in May, when they will bloom much earlier than if planted that season.

Primrose

Primulas should be sown in light, sandy compost and given ample drainage. If sown in pots, one third of the pot at the bottom should be filled with stones or pieces of broken pots. The plants should have plenty of air and not too much water at any time.

Prince's-Feather

Prince's-feather makes a beautiful background and adds brilliant coloring to the garden. Red, yellow, and green should be included in every collection. The heads can be cut in the fall and preserved throughout the winter months.

Prince's-feather will thrive in almost any soil, but a deep, rich soil, fairly moist, will produce handsome showy heads, and the seed will come up year after year. The young plants that are not desired should be weeded out in order to allow the best plants to get all the nourishment they need from the soil.

If the flowers of prince's-feather are given a thin coating of melted paraffin, they will not fall apart for a long time.

Rhododendrons

Rhododendrons require moist, loamy soil. Dead leaves buried near the roots each fall will prove most beneficial. The drainage should be good.

Rhododendrons do not produce the finest flowers if grown from cuttings, seed plants being by far the most satisfactory. It is necessary to prune them while young to insure hardiness.

When old rhododendron plants begin to fail, water every other day with water in which cow-manure has been soaked. This water should be applied to the roots by means of a pipe driven into the ground to a point where it will come in contact with

the roots. *They will not thrive in the glaring sunlight.* The best roots are usually near the surface but all roots should be fed in order to invigorate the plant.

Manure should never be applied to rhododendrons. It is far too heavy and heating for them. Leaf-mold should be worked into the earth to a depth of at least twelve inches and the plants should be kept moist and cool by a covering of straw or dead leaves on the ground near the plants.

Rock Cress

The rock cress is, as its name indicates, *a plant for the rock garden.* It has a matted growth and is excellent for ugly bare spots that should be entirely hidden. Ten or twelve small plants will be necessary for as many inches square.

Rock cress may be propagated either from seed, by cuttings, or by division of the roots. It grows best if planted in a sunny spot and it must have some sun.

Rose Geranium

The rose geranium can be trained to tree form by pinching off the small lower branches. This

should be done while they are quite small and before they have used the sap for growth which might better go toward the growth of the permanent branches. It will thrive under *the same soil conditions as the ordinary geranium.*

Rosemary

Rosemary makes a very pretty informal hedge. It is not difficult to cultivate, *requiring only a moderately rich soil.* Pruning is not necessary every season, but only when the bushes begin to present a scraggly appearance. The leaves are very fragrant and the flowers quite pretty.

In the south of Europe the rosemary is cultivated largely for rosemary oil which has commercial value. It may be propagated by cuttings without much trouble, but when extensively grown seed is usually sown.

Roses

Rose cuttings should be taken from the bushes early in October. From eight to ten inches is a good length, though successful rooting can be made from even half this length. The cutting should always be made immediately below a joint.

In rooting rose cuttings, plant the cutting two thirds or three fourths of its length, leaving only a small portion above ground. This portion will be of little value, as the main thing is to get the roots, and the new branches will look out for themselves. *The soil should be kept moist, though not wet.*

In securing rose cuttings for rooting, the slips should be taken from the branches which are a year old. Tender, new shoots have not sufficient strength and if they succeed at all will take a much longer time than the slips of older branches.

One very successful method of rooting rose cuttings is to notch or cut the stem an inch or two below a joint. This cut should be made direct through the stem to the center and should then extend upward until it has passed through the joint. A little pebble may be placed in the cut to keep it well open. The branch should then be laid in the soil and firmly covered with earth and it should remain in the ground until the following autumn, if placed there in midsummer. A stone, or two little pegs driven in the ground, will hold the branch down.

In growing roses for seed, keep them in the greenhouse. The flowers will then come early and the

seeds will ripen in good season, and they will be more reliable than those that ripen out of doors. A piece of stalk should remain attached to each seed pod when gathered, and stalk and pod should be buried in pots of moist sand.

Tender, young rose seedlings should be handled very carefully. It is extremely difficult to raise plants from seed. The seed should be kept covered with a glass in a temperature of forty-five degrees, and when the young plants appear, the glass should be removed and the seedlings brought to the light. They should be hardened gradually before transplanting, and when transplanting is being done, as much soil as possible should be taken up with the plants.

Entirely new roses are bred often by chance from home seed pods. The growing of roses is one of the most fascinating bits of work in floriculture, as one can never tell what a new rose will be like. Always the finest blossoms should be left to form rose-apples, or seed.

Rose bushes should be kept clean to aid in keeping them free from insects and disease. All fallen leaves should be gathered and burned or they will harbor insects.

To rid rose bushes of black spot, spray, after the leaves have fallen, with a solution of one ounce of sulphate of copper dissolved in two gallons of water. This spray should be applied to the surface of the ground immediately surrounding the bushes as well as to the bushes themselves.

If the rose garden has a drainage foundation of cinders or pebble under its rich loam, the roses will be much benefited. Clay soil is excellent for roses, though some varieties of roses will thrive in any soil, hence it is possible for everyone in every locality to have roses.

Roses cannot be planted too carefully. Sufficiently large holes should be dug that the roots may be arranged in such way as not to be crowded.

The space between rose bushes should be twice as great as their height. Roses will not flourish if they are crowded, and always there should be a depression in the soil surrounding the rose bush that the water may sink into the ground instead of draining to the surrounding surface.

When mildew affects the rose bushes, spray the plants with a solution of one half ounce of sulphide of potassium dissolved in a gallon of water. Two or three sprayings will usually be sufficient

to rid the leaves of mildew and give the bushes a healthy start again.

Always have some potted roses and you will have early buds. They may remain in the same pots without being repotted for several years and no harm will be done, though a firm potting of turfy soil which has mixed with it one third the amount of compost should be the bedding. Crushed bone should be applied at least once each season.

Covering rose bushes and other plants with dry earth during the winter is better than covering with leaves, as the mice frequent bushes covered by leaves and will often gnaw all the bark from a plant when they once come in contact with it.

If roses are sprayed frequently with nicotine solution the green fly and other insects will not molest them. It is much better to spray before insects make their attack, than to wait until injury has been done to the rose bushes.

Scotch soot applied to the roots of rose bushes once or twice during the season *will give a richer shade to the color* of the petals and the leaves.

Dried blood should be applied to the roots of roses once a season. Blood gives nourishment which is

not supplied in abundance by any other form of fertilizer.

Sheep manure is a splendid fertilizer for roses. It may be mixed with hardwood ashes, which are also beneficial, and both applied at the same time.

In planting roses, a little basic slag should be mixed with the soil at the bottom of the hole in which the plants are to be set, and a cupful of crushed bone should be mixed with the soil which is poured into the hole around the stem.

Nearly all varieties of roses require a rich soil and a moderate amount of moisture. All roses are hardy in the South but must be nurtured somewhat carefully in the Northern States. They should be transplanted in the spring, though to transplant in the fall will do little or no harm.

A dose of liquid manure worked in around the rose-bushes twice during the summer months will encourage their growth. They use a great deal of the earth's sustenance when in bloom.

The first crop of buds of the Clotille Soupert should be cut off or they will remain in the "button" stage and there will be no perfect roses during the season. If the first buds are cut off there will be a

splendid crop of beautifully grown roses during the entire season.

All climbing roses should be trained on a trellis or other support as soon as they start growth, otherwise the young, tender growth is likely to be nipped off and the growth of the vine will be greatly checked.

In the North, roses should be protected throughout the winter months by a mulch of leaves, straw, burlap, or earth several inches thick. A mulch of manure should be applied unless the soil already is quite rich enough.

Remember that wood ashes are excellent for the rose bushes. A hole should be dug near the roots of the rose and the ashes buried therein. Putting it on as a top dressing will do no good whatever.

The rose bushes should be carefully watched to see that no slugs or leaf-miners are working on them. A thorough spraying with *Bordeaux mixture* early in the season, and at intervals throughout the season, *will keep the rose bushes free from bugs.*

Prune all rose bushes as soon as they stop blooming. Not to prune the bushes will result in many

shoots and very poor flowers. It is only on the young laterals that the best roses appear.

Most rose bushes can be trained to become rose trees by trimming off all shoots near the ground, staking the plant, and allowing the top branches to spread. The centers of the top branches should be pinched out to form spreading tops.

In the fall in localities where the climate is severe, remove all climbing roses from their supports, if possible, and cover the branches with earth. A little trimming may be desirable to lessen the space occupied by the branches on the ground.

Mounds of earth from five to ten inches high drawn up *around the base of the rose bushes will protect the stems from mice.* As an added protection, the ground should be permitted to freeze slightly before winter protection is supplied.

When mildew comes on the rose bushes, the bushes should be dusted with powdered sulphur. If this does not prove to be effective the rose bushes should be removed to some other location the next spring. Too much shade will often cause mildew, or too little circulation of air.

Moss roses and sweetbriers should be washed occasionally if planted where they get much dust or where there is soot in the atmosphere. The leaves gather dust and soot easily and when they are covered the plants cannot breathe enough oxygen and they will soon become sickly looking and may die.

The sweetbrier rose makes an excellent hedge as a shelter for rose beds, as it is proof against exposure, thus protecting the rose bushes from strong winds on the north or east, and also serving as a beautiful background.

Charming hedges and backgrounds may be made by planting a number of Ayrshire, multiflora, Scotch, hybrid perpetual, and tea roses. There is nothing quite as satisfactory to the gardener as a plenteous supply of beautiful roses, and one can never have too many.

A southern exposure is the best for the rose bushes, or if this cannot be had, then at least some protection from the cold winds of the north should be provided. In arranging this protection, do not deprive the roses of sunlight or they will not thrive.

Among the qualifications of the Tausendschoen (thousand beauties) are:

The color is an unchanging, beautiful shell pink.

It has a pronounced fragrance.

The flower has unusual lasting qualities.

It keeps in good condition when cut.

It is immune to insects, mildew, and disease.

It is a rapid grower.

It has a great number of flowers in proportion to its woody growth, and

Its foliage is beautiful all summer.

Monthly roses are not the choicest roses but they are the ones which *give the greatest amount of satisfaction year in and year out.*

Among the *roses* that are satisfactory *for planting in city back yards* are the following:

China Roses	Enchantress	Gloire de Dijon
La France	Jacqueminot	Duke of Edinburgh
Baroness Rothschild	Grace Darling	Clio
Waltham Climber	Crimson Rambler	

In planning a color scheme, one should never neglect the roses. There is such a variety of color among them that it makes them almost the most important flower in the garden during their bloom-

ing season. Below is given a list of some of the best growing roses according to color:

White	*Light Yellow*	*Dark Yellow*
Boul de Niege	Caroline Kuster	Lady Roberts
Coquette des Blanches	Cloth of Gold	W. A. Richardson
Gardenia	Duchess of Portland	Pierre Notting
Lacharme	Maréchal Neil	
White Lady	Medea	
Bessie Brown	Étoile de Lyon	

Pink		*Dark Red*
Aurora	Madame Camille	Crimson Rambler
Marie Verdier	Pink Rover	Duke of Albany
Clara Watson	Duchess of Fife	Prince Arthur
Captain Christy	Baroness Rothschild	Emperor
Ethel Brownlow	Killarney	Zanzibar
La France		Duke of Fife
		Liberty
		Betty Berkeley

A list of climbing *roses which are easily trained over doorways and arches:*

White	*Yellow*
Rampante	W. A. Richardson
Aimée Vibert	Aglaia
Bennett's Seedling	Jersey Beauty
Wichuriana	Cloth of Gold

Pink	*Red*
Dorothy Perkins	Crimson Rambler
Euphrosyne	Ard's Rover
Flora	Carmine Pillar
Garland	Gracilis
Waltham Rambler	Reine Marie Henriette

Salpiglossis

Salpiglossis is sometimes hard to get started and it should be started in the greenhouse or indoors and hardened off before being put out of doors. *The soil should be rich but light.* In certain localities it does well when sown out of doors and a second sowing can be made for blossoming late in the summer.

Salpiglossis, sometimes called painted tongue, owing to the colored veins in the leaves, will bloom for two months or longer under favorable conditions. *It is most effective when planted in groups.*

Scabiosa

Scabiosa is not a plant of rare beauty but it *becomes a great favorite with those who appreciate a flower of long season.* It may be treated as an annual and raised from seed under glass; as a biennial and sown in June for planting in permanent position in the fall, and in some localities as a perennial.

Scabiosa requires a sunny location, but it will thrive in almost any soil and is particularly adapted to the rock garden. It may be propagated either

by seed or by a division of the roots. The root division should be made in the spring or in the early fall.

Scarlet Sage

Scarlet sage is one of the most satisfactory of autumn flowers. It makes a good plant for window boxes, for pots, and for cutting in decorating. As a hedge or border plant it cannot be surpassed.

The seed of salvia, or scarlet sage, should be sown in cold frames or window boxes in March or April and the young plants transplanted during the latter part of May. If the seed is to be sown where the plants are to stand, it should not be planted until the first of June and the young seedlings should be protected from strong wind and heavy rain. *A rich light soil is required.*

Silene

The seed of silene should be sown in August in the cold frame and the young plants transplanted to the garden when the frost is out of the ground. The plants should be set four or five inches apart, or they may be planted for mass effect or in rows. They require light, well-drained soil.

In cold climates silene plants should be covered in the winter with a thin mulch of leaves, or straw, or even a slat frame will answer.

Silene mixed with German iris makes an attractive combination. If the plants are *kept moist,* they will continue blossoming until late in the season. They should not be planted where they will receive too much strong sunlight.

Smilax

Smilax has a great commercial value as there is no vine which lends itself more prettily to decoration. It is of vigorous growth and requires plenty of room for spreading. *It should always be planted in a rich, loamy soil.*

The roots of smilax are used in making sarsaparilla which is in such common use. *It can be propagated by detaching sections of the roots* in the fall of the year. Little pruning should be done, instead plenty of room and good soil should be given to induce rapid and prolific growth.

Snapdragon

Seed of the snapdragon sown in the open ground in May will produce flowers in July or August. For

earlier flowers, the seed should be sown under glass in February or March and the young plants transplanted to the open ground as soon as the weather grows warm enough to slightly heat the ground.

While the snapdragon is a perennial it will produce a greater variety of flowers, and much more handsome ones, if the seed is sown every year. *It should be treated in every way as an annual.*

To protect the snapdragon through the winter for early spring blooming, it should be protected by a mulch of leaves or manure during the cold months.

The snapdragon requires a moderately rich soil and a good, sunny location, with frequent waterings. The average height of this plant is from fifteen to eighteen inches.

Sneezeweed

Sneezeweed thrives in ordinary garden soil, and requires little attention, other than a semi-occasional cultivation and a division of the roots every two or three years.

Sneezeweed, or helenium, planted as a group is very effective. Each variety should be kept sepa-

rate in this case, to give a more pronounced effect. *The plants should be staked* before they have attained much growth, otherwise the rain or wind will soon beat them down.

Snowdrop

The bush snowdrop will grow in almost any soil and requires little cultivation. The flowers are harbingers of spring and hence receive an enthusiastic welcome. For planting among shrubbery, in rocky places, in shady places, or in clumps it is equally satisfactory.

Spiræa

Spriæa is beautiful as a separate and distinct bush, in clusters, or for forming a hedge. It *thrives in rich, loamy soil* and should have an application of manure every fall, though it will grow and flower very prettily in a sandy soil.

There are so many members of the *spiræa* family that some one kind may be chosen for almost any site or location, or garden scheme. It is not necessary to prune it, but *an occasional pruning, say every two years, will prove beneficial.*

Stocks

Stocks require a deep, rich soil in order to do their best. They are most satisfactory for both garden plants and as cut flowers. They are easy to grow in almost any soil and have a great variety of flowers. *Frequent transplantings will give them a stocky growth.*

Stocks that bloom late may be preserved during the winter if they are lifted carefully and potted before the earth falls from the roots. As much earth as possible should be taken up with them, and the temperature of the room in which they are kept should be fairly cool and the soil kept somewhat moist.

Sunflowers

For planting in a garden where there is plenty of space, the sunflower will yield satisfactory results. Planted among shrubbery, the yellow blossoms are at their best. It will thrive under almost all conditions and in any soil, though a moderately rich soil, with good drainage, is best.

Sunflower seed should be planted in the open ground in the spring, as soon as the ground is free

from frost, and the plants should be thinned to stand three or four feet apart. Some plants grow to a height of ten feet.

Sweet Peas

A mixture of bone meal and soot applied to the soil in which sweet peas are to be planted will help greatly in securing large, long-stemmed flowers. All but three or four stems on each plant should be pinched off as soon as they are large enough to determine which will be the best ones to leave on.

Sweet peas should be planted in trenches eight inches deep and the seed covered to a depth of one inch. After the plants have attained a growth of five or six inches, the soil should gradually be banked up around them until it is within an inch of being level with the surface of the earth surrounding the trench. This tends to conserve the moisture and quickens the growth of the vines.

The most satisfactory way of growing sweet peas is in long rows provided with rabbit-netting wire, supported by strong anchor posts and intermediate stakes to prevent the wire from sagging between its supports.

Sweet peas require soil well supplied with plant food. Ten inches of rich garden loam, in the bottom of which has been worked in three or four inches of compost, and over that two inches of fine top soil, will produce wonderful results. A coarse top soil of sand is very important. The soil should not be too rich and a balance is sometimes difficult to strike, but when once struck, sweet peas no longer will be hard to grow.

In the South sweet peas should be sown in the fall in order that they may get an early start before the weather becomes too warm. *In the North*, all preparatory work should be done in the autumn that *the seed may be planted as early in March* as practicable.

Sweet peas should be thinned out in order that the roots may have branching space. A vine every six inches will produce better results in growth and blossom than plants only two inches apart. They *should be cultivated frequently.*

When sweet peas are to be transplanted, they should be started in small paper cups, or dirt bands, and transplanted by setting the cup in the soil. The paper should be torn away gently in order not to disturb the young roots.

To keep bugs off the sweet pea vines, spray every few days, or once a week, at least, with a solution composed of strong smoking tobacco soaked for twenty-four hours in cold water. A pound of tobacco to two gallons of water will be a good proportion. When desired to use at once, boil for an hour or more instead of leaving to soak overnight.

Sweet peas will stop blooming if they are allowed to go to seed. The blossoms should be picked regularly and thoroughly.

To keep sweet peas fresh after cutting, take them from the vines early in the morning while the dew is still on them and put in water to which has been added a little soft charcoal.

For growing long-stemmed sweet peas, the seed should be sown the latter part of January or the early part of February. The seed should be sown in dirt bands, or paper cups, and the cup planted with the young plant as soon as the ground is sufficiently warm to justify the planting.

Sweet pea blossoms should always be cut from the vines, never broken or pulled off. Pulling them is liable to injure the vines by loosening the roots.

If the soil around the sweet pea vines is mulched with the clippings of lawn grass, it will tend to keep the ground cool and moist, a condition necessary to the *successful growing of sweet peas.* Watering the sweet peas should never be neglected.

Sweet-William

Sweet-william requires a rich soil and an abundance of moisture in order to produce large, showy flowers. *Seed should be sown in hotbeds* the first week in March, and the young plants transplanted to small pots for a few weeks before setting out of doors. This will give strong, vigorous plants.

When *seed of sweet-william is sown in the open ground,* to get the very best results, the plants should be thinned out so that every plant will stand at least eight inches apart.

Sweet-william has a long season and requires practically no care after once coming up in the open, or having been transplanted for the last time.

In transplanting large sweet-william plants at the end of the season, the middle of September is the latest period at which they should be moved. In re-planning the garden beds, bear this in mind.

Thistle

Perhaps no plant bears such a bad reputation as the *Canadian thistle.* Certainly it *is a pest* with its habit of laying over winter in a dormant condition and its seeds infesting a neighborhood for miles. *The roots as well as the tops must be killed.* To prune the tops will make it thrive more luxuriously than ever. Salt spread over a thistle patch will eventually kill off the plants.

A coating of straw or manure a foot or more in depth left on for a period of eight or ten weeks will *kill the thistle.*

Tulips

Darwin and cottage tulips are often grown in clusters and never disturbed from one year to another with excellent results. They are cultivated and fertilized with liquid fertilizer, and no more attention paid to them.

Tulips require a rich, heavy soil and should be kept moderately moist. They should be planted in the fall and left in the ground over winter. The bulbs should be covered to two or three times their

depth and a covering of straw or compost placed over the earth after covering. This covering should be taken off when the shoots begin to push through in the spring, but it should be removed gradually instead of taking all of it off at once.

Tulip bulbs should be planted from four to six inches apart out of doors but three or four bulbs may be planted in a six-inch pot *for the house or greenhouse*, as these bulbs are forced, more or less, and usually are not good for a second planting, at least, not as house plants.

A round bed of tulips six feet in diameter will require two hundred and fifty tulip bulbs planted four inches apart.

To plant tulips between such plants as daisies, moss pinks, sweet alyssum, forget-me-nots, and pansies is a most happy plan. The plants act as an effective foil for the tulips.

When the shoots of tulips, hyacinths, narcissi, daffodils, and other bulbs first begin to appear above ground, remove a little of the covering which has been on all winter. The next day remove a little more, uncovering gradually as the shoots grow and harden. This will cause the plants to be strong

and hardy and the first cool turn of weather will not harm them.

Verbena

Verbena seed should always be soaked in lukewarm water for a few hours before planting and should be sown in a hotbed with light rich soil on the surface. In transplanting, the plants should be set first in other boxes and later be set in the open ground at a distance of twelve inches apart, as they spread in growing.

Verbenas require plenty of sunlight and good drainage, though they should be watered frequently, and always in the evening or at night.

Verbenas may be grown from cuttings with success, but the best flowers, as a rule, come from new plants. They may be used with excellent effect as borders, in mounds, and in window boxes. They bloom so profusely that a large bed of white verbenas will look like a white sheet spread on the ground at night.

The lemon verbena does not properly belong to the flower which we ordinarily class as the verbena. It

is not very successful as a bedding plant but a few plants in a garden *will be much admired for their delicious fragrance.*

Violets

Violets should be given a rich, damp spot.

Violets should not be permitted to dry out during hot weather. The soil should be kept moist if the plants are to be in good condition for flowering.

When rust attacks violets, the diseased leaves should be removed and the plants then sprayed with a solution of one half ounce of sulphide potassium dissolved in a gallon of water.

Violets will benefit by having some protection. A frame placed over them when growing out of doors, to protect them from cold winds and heavy rains, will cause them to produce finer flowers, and the buds also will open earlier.

Wistaria

The wistaria requires a rich soil, frequent watering, and cultivation while young, but after it has once attained a good wood growth, there will not

be need for much attention, an occasional pruning, once every two years, being all that is really necessary. Basic slag or other phosphatic food applied to the roots will produce large, handsome, showy flowers.

When wistaria refuses to bloom, see that it is not overcrowded, that the vines are not wrapped around each other, and then cut off a part of the tap-root. This root should be cut off about twenty inches below the surface of the earth.

The wistaria vine is excellent for use where a screen is desired. The growth, however, is slow, which is true of all perennials, and some quick-growing annual should be planted with it for immediate effect.

Zinnia

Given a *strong rich soil* to begin with, no more attention need be paid the *zinnia* and it will flourish on poor soil.

The zinnia is particularly adapted for outdoor growth. It is not delicate enough to be attractive for use as a house plant or for cutting purposes.

It gives the best result when massed with other old-fashioned flowers, as each separate flower has little real beauty.

For June flowers the zinnia seed should be sown in the hotbed the first of April. It transplants easily and if dead flowers are kept cut off, the plants will blossom until frost falls. Zinnias are particularly advisable for planting in spots where other flowers will not thrive, and for heavy effects.

Suggestions for Vines

A rich well-drained soil is required for vines, and annuals given the proper soil will yield most satisfactory results while waiting for perennials to grow. Some which have rapid growth are the *moonflower, the morning-glory, cypress vine, the hyacinth bean, and nasturtiums.* For an immediate screening these vines are indispensable.

Vines which attach themselves to wire or wood supports and which are chiefly valuable because of their covering and shading effects *are the wistaria, trumpet flower, clematis, ivy, and honeysuckle.*

To pinch off the top of *bean vines* and other vines will make them *branch out at the top and bloom more profusely.*

Among the vines which will thrive on a north wall are the Japanese quince, the winter jasmine, golden bell, ivy, and climbing hydrangea. The branches of vines which are to climb on a wall should not be too close together, or they will not flower. The ground should be well drained in order that it may not become sodden.

Here is a list of some *vines* which are very satisfactory *for window box culture:*

Madeira Vine	Tradescantia
Vinca Harrisonii	Glechoma
Othanna	Ivy-leaf Geraniums
Saxifraga	German Ivy

The wild cucumber grows rapidly and will cover a summerhouse in one season. It has beautiful foliage and exceedingly pretty, fine white flowers.

The wild grape vine is a rapid grower and can be found growing along the banks of a creek or river in all parts of the country. The flowers are very fragrant and altogether it is one of the most satisfactory of vines for use as a screen or shade.

The hyacinth bean has brilliant red flowers and it is excellent for training over walls or other supports having a height of seven or eight feet. It

will come up every year if cut down and when once started will *require little care.*

The old-fashioned morning-glory has no superior for rapid growth and density of foliage. It will reach second-story windows by midsummer if the seed is planted in dirt bands in February and the plants planted in the bands as soon as the ground is warm.

Among the climbing roses are the Dorothy Perkins, the Crimson Rambler, and, for the Southern section of the country, the Cloth of Gold. These roses are hardy and do not have to be pampered. The Dorothy Perkins is a beautiful pink and the other two bespeak their colors in their names.

The English ivy gives excellent results even when planted in shady spots, or in rooms where there is not much direct light. It should be washed occasionally and when used as a house plant, it may be removed to the out of doors without much trouble and laid on the ground for the rain to wash it off, or for a good ducking from the hose.

When the ivy looks old and worn, clip it back severely in February or March. All the old leaves

may come off without detriment to the vine and fresh new leaves will come in their place. This pruning should not take place until just about time for the new growth to start.

English ivy is easily rooted by inserting cuttings in a bottle of water kept in a shady place. When the roots are well formed, the plants can be potted. Another plan is to take a long branch and peg it down. Every joint pegged down will root, when the stem can be cut, each joint making a separate plant.

One of the prettiest vines for the autumn is the bittersweet. It should be planted where it can grow on an arbor or fence where it will give the berries every chance for display.

The branches of wistaria and other vines should not be permitted to twist around sister branches. If they do their growth will be stunted and the vine can never be trained to trail where it is wanted. When they once get a start they are hard to unwind.

The hop vine, once grown only for yeast, is now often used in the flower garden. It *grows quickly and has a beautiful leaf.*

Vines such as honeysuckle, clematis, and crimson rambler should be trained over a wall, on a trellis, a summerhouse, or over a gateway. If permitted to ramble at will, they will not seek the best for themselves but will become a matted mass and half the beauty will be underneath.

The following vines can be raised from seed each year and depended upon to act as a screen each season:

Gourds Wild Cucumber Morning-Glory Cypress Vine
Moonflower Balloon Vine Ornamental Beans Japanese Hop

Stumps of old trees covered with vines will make an unsightly spot beautiful. Dead bushes stuck in the earth temporarily and vines planted at the base will be a most satisfactory method of providing a place for such vines as do not require a permanent trellis.

Vines are so inexpensive and so easy to grow that no garden should be without them. They are delightful for cutting and arranging indoors. Long sprays hanging over the side of a tall vase form a most graceful arrangement and a dining table can have no prettier floral decoration than vines twined around a centerpiece.

Round screw hooks inserted in a wooden wall will often answer as *a support for vines.* They

should be placed in the position in which the vines are to be trained. They are particularly good for vines of single stems.

The Virginia creeper is sometimes confused with poison ivy, but there is really no reason for this mistake, for besides the difference in leaves which can so easily be seen when placed side by side, it should be remembered that the *Virginia creeper always has five leaves on a stem while poison ivy has but three.*

In destroying poison ivy, pulling up the vine will not always rid a spot of it. A strong solution of bicarbonate of soda dissolved in boiling water should be poured all over the surface of the ground where the vine has grown in order to kill the young and tender roots which have developed and started growth.

When vines are desired for flat table decoration, there is nothing prettier than clematis. Both the feathery white flowers and the leaves are charming, and it has the advantage of staying fresh a long while after it is cut without being placed in water.

The Tartarian honeysuckle grows to a height of twelve feet and forms a very graceful specimen plant

with small but very fragrant blossoms. It *thrives under dry farm conditions.*

In every garden, there should be a dishrag gourd vine. Gourds are very easy to grow and the luffa makes excellent dishcloths. These dishcloths never get really dirty or sour and nothing adheres to them. One will last six or eight weeks, becoming whiter and softer as it grows older. Three or four cloths can be made from one luffa of fairly good size.

Gourd seed may be sown in boxes indoors in March or April and the young plants transplanted to the garden in May for September blooming. The vines are usually large and luxuriant, and the plants will grow in almost any kind of soil, though a fairly rich soil will promote the best growth.

Wood ashes applied to the roots of gourd vines will be very beneficial to the vines and *will have a splendid effect on the size of the gourds.*

Sweet pea vines and other plants which have finished blooming should be cleared away. For them to stand will only attract bugs, while they may be *utilized by making humus,* thus living over again in next year's plants.

In every garden there can be found *a place for climbing vines.* No other variety of plant offers so much for the trouble. Among those which are easiest to grow are:

Canary-bird Vine	Gourds	Moonflower
Cobæa scandens	Hyacinth Bean	Morning-Glory
Cypress Vine	Japanese Hop	Nasturtium
Clematis	Common Hop	

General Plan of the Garden

Plan the garden on the spot. While to put it down on paper will be most helpful, the paper design should be made in the garden itself, otherwise there is likely to be confusion when it comes to working out the plan with actual plants. The size of the plants to be grown should always be taken into consideration when setting aside a certain space.

Study the color scheme of your garden as you would study the color scheme of your living rooms. It is just as important. A first impression, gained from the outdoor surroundings, means much.

A flower garden should have some protection on the north if early flowers are desired. A southern or eastern exposure will permit the garden to get

the benefit of the strong morning sunlight, which is so beneficial to plants.

Flowers requiring thorough drainage should be planted on a slope if possible. There should be no depressions on the surface of the garden where water will stand. Aside from the excess moisture rotting the plants nearby, mosquitoes will breed in great numbers.

The general lay-out of the garden should be studied before flowers are set out. The location of a flower will have a very important bearing on the vigor and growth of the plant as well as determining the size and season of the blossoms. Certain plants will not blossom at all unless they get sufficient sunlight, while others will become parched from too much sun. *A change of location in the garden often is all that is necessary to make a hitherto sickly plant thrive.*

Experiment with flowers. Graft kindred plants and watch the result. Nothing will give greater pleasure than making a discovery in plants, and nothing will more quickly yield results.

Every yard and flower garden is worthy of a plan before planting is begun, and the plan should be

drawn to scale. It should show just what space is to be allotted to flowers, to shrubs, and what will remain merely a grass plot. *The trees to be planted should be carefully considered* and the location for planting marked on the plan.

In planning a garden on paper, quadruled paper should be procured. Draftsmen use a paper ruled in quarter-inch squares, and in using this, each quarter-inch square should represent a foot of ground.

Unless plants are given sufficient room for full development the flowers which they produce will be inferior in size, form, and color. While it is advantageous to sow the seed thickly at planting time in order to make sure that some will germinate, it is equally desirable to have the plants thinned so as to provide ample space for the development of each individual plant.

When flowers are grown for the purpose of cutting the blossoms the most satisfactory and economical plan is to plant them in rows instead of clumps or jotted around here and there.

For a large amount of flowers in midsummer and for the early beautification of a new place *annual*

flowers will prove most satisfactory. Hardy perennials are deservedly popular as they need little attention from year to year, but most of them are best fitted as background plants.

Planting should be arranged so that it will afford flowers each season of the year. As many colors should be provided as is possible, and plants of different shades of green in the foliage should be included in every garden.

In every garden, however small, there should be a seat. In a small garden, the seat should be small, but where there is plenty of space, a large seat or a group of seats, a summerhouse or a pergola with seats can be placed to advantage. Let a garden look as if it had human beings taking a personal interest in it.

Large vases and statuary of all kinds have no place in a small garden. These formidable looking ornaments are all very well in a large garden where they may be partly hidden by shrubbery, but they are grotesque in a small garden. A garden is meant for growing and displaying flowers, not artificial works of art, so-called.

Cedar wood makes the best stakes for outdoor use. Oak, too, is very desirable as it weathers to an

obscure gray. Brightly painted sticks of fancy design do not add to the garden, but rather detract from the natural beauty of the foliage.

In selecting a site for a summerhouse, see that the view is the most attractive in the garden. As a rule, a great deal of one's time, and the time of the guest, is spent in the summerhouse and the view is of the utmost importance

The plainer and more simple the lines of the summerhouse, the more attractive it will prove. The features to be emphasized in a garden are the grass, shrubbery, trees, and flowers and anything wholly artificial should be as inconspicuous as possible.

The planting of trees or shrubs or the placing of fountains along a walk is a common sight but there is no reason for it. All small areas containing walks and drives should be planned as simply as possible. A small yard, however, may contain a vase or two if they be not too large.

No one variety of flower should be planted in the same spot year after year. The particular plant food which that plant needs will be all taken up after the second year, yet some other flower may thrive well there.

Where there is a great deal of white and a liberal amount of green foliage, *the color scheme will be safe*, whatever the mixture. Feathery foliage should predominate as heavy stiff leaves will present a more or less dense and somber effect.

Where a mass of brilliant red is desired in the garden, nothing will be more effective than salvia, or scarlet sage.

Plant plenty of white flowers in the garden. They are not only beautiful in themselves but they tend to emphasize the color of the other flowers near. No other one color aids so in emphasizing the color scheme in the garden.

In selecting plants, choose them for their hardiness rather than size. Large plants often have a forced growth, but if tender, they will not survive a replanting. Note carefully the main stem of a plant rather than the leaves.

Flower beds will not be neat in appearance if the sod is not kept nicely edged. Stray blades of grass pushing themselves over the bed presents a very ragged and unkept condition.

The rearranging of flower beds, and the general replanning of the garden should be done in January,

that the work may be begun just as soon as danger of frost is over.

In planning borders, see that there is a background of shrubs, vine-covered walls, or tall plants, with an abundance of bright colored flowers and plenty of foliage.

Soil

Pulverizing the soil before planting seed and young plants will make the task of cultivating much lighter, as well as benefiting the plants materially from the start.

Soil containing more or less sand will grow warm earlier in the spring than soil without sand. Sandy soil is also easily drained, though too much sand means little fertility.

If the soil sticks together when rolled into a ball by the hand, it is too wet to be cultivated. Soil should never be plowed or harrowed unless it is almost dry, otherwise there will be rough lumps afterward.

In localities where the soil is moist, plants that require good drainage should have a specially raised

bed prepared. Heavy clay soils should always have particular attention paid with reference to drainage and all excess water should be well drained off before plants are set out.

Sawdust and old shavings should never be permitted to lay in piles around the garden. They become sour and will have a bad effect on plant life, as well as attract some kinds of worms.

Unless specially prepared soil is supplied a new garden will have a struggle to gain a foothold. A piece of *land that has been under careful cultivation for two or three years will yield the most satisfactory result* when it comes to raising flowers.

When the garden has a clay soil for a foundation, there should be applied a mixture of ashes and leaf-mold or sand and leaf-mold to offset the clay. Ashes should be used when possible as sand tends to decrease the fertility of the soil.

Fertilization

To plant flowers and not properly fertilize them is a waste not only of good seeds and plants but of valuable time. A little fertilizer will go a long way if

applied in time. The fertilizer should be well worked into the soil before planting, whenever feasible, but adding it afterwards will give very good results. Even on soil originally rich, a little fertilizer should be added once a year.

Well-rotted stable manure only should be applied to plants. To put it on while fresh will only burn the plants and they may never really survive it.

Barnyard fertilizer is among the most valuable of fertilizers. It should be six months old and should be well worked into the soil.

A little limewater poured on soil a few weeks before planting will be very beneficial. Limewater not only fertilizes but it has a disastrous effect on cutworms and other insects which harm plants. Clay and humus soils particularly need lime.

Ashes from hardwood for roses is advice as old as it is good. It should be placed where the roots can reach it.

Nitrate of soda is a good fertilizer and acts quickly on the soil, but it should be used with great caution as too much of it will burn a plant up. A teaspoonful is a dose for a good-sized plant.

House plants should occasionally be watered with water to which has been added a tablespoonful of *ammonia* to a two-quart measure of water. This fertilizes the soil and kills bugs. Water which has been used for washing dishes or fabrics will answer as well as fresh water.

There is nothing better for plants than rich, greasy dish water. Be careful to pour it on the soil only for it will not improve the appearance of the foliage.

Bone ground to meal is excellent for the flowers. It contains lime and phosphate and an ounce will be enough for four or five square feet of earth. The phosphate will promote both flowering and fruitfulness of the plants, hence plenty of bone should be used when *seed* is to be saved.

Dried blood from cattle is a nitrogenous food and *will cause wonderful growth of foliage* both with regard to size and coloring.

In preparing compost, i. e., in rotting stable manure, sprinkle a little finely ground raw phosphatic rock over it each time it is turned over, which should be twice a week for several weeks, and the fertilizer will be strengthened.

A good proportion of the constituents of fertilizer is as follows:

Phosphoric acid	8%
Potash	8%
Nitrogen	3%

This should be thoroughly worked into the soil for a depth of three or four inches and should be applied just previous to planting.

Decaying cabbage, cauliflower, and brussels sprouts make a good fertilizer for flowers.

Fertilizers containing nitrogen are beneficial for the growth of flowers. Lack of nitrogen will produce faded leaves, small in size, and spindly plants. The dried blood of cattle and sulphate of ammonia are nitrogenous fertilizers.

Fertilizers containing a large percentage of phosphate should be used on plants when superiority in the flowers is desired. Basic slag and crushed bone are phosphates and either may be used to advantage. Two ounces of bone to a plot containing eight or ten square feet is a good proportion; while twice the amount of basic slag should be used for the same amount of space.

Potash in various forms applied to the roots of plants invigorates and strengthens them. Sulphate

of potash and muriate of potash may be obtained at any florist's and at seed houses and most of the department stores.

Ashes from hardwood contain a large percentage of potash and may be applied at any season of the year, though it is better not to put them on when there is danger of the roots actually getting chilled from having the earth disturbed near them.

Fertilizers should never be placed immediately on the roots of a plant, but just beyond the tip ends of the roots where in their own time the roots can take up the nourishment. To place it directly on the roots is likely to burn them.

Liquid fertilizer is excellent for applying to growing plants. This may be home-made with most fertilizers and is made by simply mixing the fertilizer with a generous supply of water. In applying, dig holes near the plant and pour the liquid into them. It will penetrate the earth in good season. It should be applied frequently and should be somewhat weaker than if applied only once.

Sheep manure is an excellent general fertilizer. Manure is very strong and should seldom be used

before it has been turned to compost. *Barnyard fertilizer is excellent for most plants*, and there is no danger of burning plants by its use as there is from using stable manure.

All debris, or waste matter, should be removed from manure before it is applied to the soil. Sticks, stones, and other trash will choke the young plants and the growth will be materially retarded.

Every garden should be well fertilized once a year, preferably in the fall. The winter snows and rains will drench it and take the substance down into the earth, where it will lie all winter and be in good condition for the spring.

When soil is poor and no analysis has been made to determine just what is needed, it is safe to use a composition of 8% phosphoric acid, 3% nitrogen, and 8% potash. A highly recommended proportion is eight pounds to the square rod.

Ground rock phosphate is a very *valuable phosphate fertilizer*. Sprinkled over compost when being made, it will help to keep the ammonia in the soil.

Compost is simply well-rotted stable manure. To rot the manure, it should be piled to a height of

four or five feet in stacks four or five feet square and left to stand for several days—ten days will not be too long—after having dampened it thoroughly with water. It should be turned over and dampened several times at intervals of a week or more when it will be ready for use.

Compost should be well worked into the soil to a depth of several inches and *should not be put on full strength when applying to young and tender plants*, but should be mixed with sand or even clay. A phosphate fertilizer, such as phosphatic rock or crushed bone, may be mixed with it to excellent advantage.

Barnyard manure is excellent when a fertilizer is badly needed to promote rapid growth, as it may be applied directly to the roots or may be placed in the hole when setting out plants.

In using nitrate of soda, never apply directly to the roots. It is wonderfully invigorating but will kill tender plants if too much is used. A teaspoonful is a dose for a plant which attains only a foot or two in growth.

Soil that is continuously damp is likely to become moldy or sour. A bit of lime worked into the soil

will destroy the mold and dry out the earth and there is no danger from an over-amount being used. No planting should be done for some time after the lime has been applied.

Where there is too much potash in the soil, or a large amount of humus, an application of lime will be most beneficial. It counteracts these two fertilizers and moderates the soil.

When using commercial fertilizer, follow the instructions which accompany the package. They will seldom advise the use of too small an amount but the reputation of the fertilizer is at stake if they recommend more than is necessary and the plant is burned up.

Nearly all the States in the Union have agricultural experiment stations where samples of soil may be sent to be analyzed for determining just what fertilization is needed. There will be no charge for the analysis, as the experiment stations are established for the purpose of encouraging vegetation. If there is none in your State, a neighboring State will probably have one.

When soil has been over-fertilized an application of lime may be made in the fall and the effect desired will have resulted by spring planting time.

Soil that is used every year and kept more or less moist should have a dressing of lime applied occasionally. It should be put on after the soil has been well cultivated and should be worked into the soil for a depth of several inches. The fall is the best time.

Guano makes a good fertilizer when fertilization is needed for growing plants. It is mild yet has a very good effect. Half an ounce mixed in three quarts of water and poured around the roots of a plant will prove a satisfactory way of applying.

When leafy plants have stopped blooming, cut them and pile up the leaves to rot and *make humus.* Grass, too, makes an excellent humus but should be well rotted. Place well away from the garden for insects are likely to breed.

The three principal chemicals that plants require are nitrogen, phosphate, and potash. Nitrates are the energy givers. They constitute the tonic which gives the plants an appetite, and should never be given alone to any plant, unless to counteract the effect of foods already given. Phosphoric acid, which produces flowers, is really petrified bone and is supplied by the excrement of vanished races of

animals. Potash, which makes the fruits, is found in wood ashes. *The proper proportion of these foods to apply to plants* is 2 parts of potash, 3 parts acid phosphate, and 5 parts of nitrate of soda.

In applying wood ashes to the garden plants, sift them well beforehand, or there will probably be many lumps in the ash soil which will not be beneficial to the plants and may, indeed, be detrimental to the roots.

Manure should never be applied direct to the roots of plants but should be put into the ground at a little distance that the roots may receive the sustenance through other soil and through moisture, rather than direct. Fresh manure will burn the roots of most plants.

When bone meal is used as a fertilizer it should be ground very fine. Unless it is ground fine it will not give good results as it takes too long for the plant to absorb the food in it.

When digging up flowered-out plants, or trimming the branches, or pulling up vines, make sure that they are not covered with insects, then *bury them*

to make humus in the ground. Thus a plant will live on and on, never really dying. If they have insects on the leaves or stems, or any kind of plant disease, they should at once be burned and not allowed to come in contact with other plants.

After applying strong fertilizers, such as ammonia, magnesia, iron, nitrate of soda, etc., an application of lime should be made, in the proportion of one pound of lime to every ten square yards of earth.

Manures are not only valuable as plant food but they also serve to temper soil which is not suitable as well as to provide warmth when used as a winter covering for plants.

When the soil is heavy and needs lightening, vegetable refuse, turf, and leaves will prove satisfactory for working in to a depth of a foot or more. Light soils may be made heavier by the use of stable manure, which will give to the ground more adhesion and body.

Sheep manure and barnyard fertilizer contain a generous supply of nitrogeneous food and are useful as top dressing for plants which are already set out.

Liquid manure is a food in such form that it *can easily be assimilated by growing plants. Its chief*

value lies in the fact that it *stimulates plants which are already flowering*, with no disturbance of the root growth, which so often happens when applying solid fertilizer.

Nitrogeneous fertilizers stimulate leaves and stems of plants at the expense of the flowers.

A liberal supply of *potash in the soil will increase the quality and perfume of flowers*. This fertilizer is much used by florists producing blossoms for perfumes.

In watering trees, shrubs, and flower beds, the earth should first be loosened that the water may readily soak into the ground. To drive holes into the earth by means of a large stick will aid in the loosening process. The nozzle should be taken off the hose and the water applied to the holes.

Trees and shrubs should be washed off by the use of the hose *once or twice a week to give the leaves a breathing chance*. This watering will also aid in keeping insects away, though if they have a good start something more drastic than water should be used.

A wire fence or metal trellis on which to train vines will prove less expensive in the long run than

wooden trellises. Wooden trellises are splendid for a time but it will not be many seasons before the ends in the ground rot off, and when perennials have had full sway for a couple of seasons it will be very disastrous to disturb them in order to put up a new trellis.

Often there is doubt in the mind of amateur gardeners as to *what quantity of fertilizer should be used*. While there can be no fixed and definite rule, for the reason that everything depends upon the condition of the soil before fertilization is started, the following table will prove reliable when soil is lacking in any one particular:

	Per sq. yd.	*When to apply*	*Remarks*
Sulphate of Ammonia	½ oz.	Spring	¼ oz. may be mixed with 1 gal. of water
Nitrate of Soda	½ oz.	During growth of plants	Same quantity if mixed with water
Sulphate of Magnesia	½ oz.	Spring	
Sulphate of Iron	½ oz.	Spring	Same quantity to 2 gal. of water
Guano	1 oz.	Spring or summer	½ oz. to gal. of water
Dried Blood	2 oz.	Spring	1 oz. to gal. of water (instead of ammonia)

	Per sq. yd.	*When to apply*	*Remarks*
Nitrate of Potash	½ oz.	Spring	½ oz. to gal. of water
Crushed Bone or Bone Meal	2 oz.	Autumn	Used in connection with nitrogen and potash
Basic Slag	4 oz.	Autumn	(Used instead of bone)
Kainite	½ oz.	Spring or autumn	

A thin covering of *wood ashes* spread over the lawn just before watering it will prove to be *good food for the grass.*

Grass seed is usually planted in the spring, but if it is planted in the early fall, just as soon as the weather is cool enough to insure that the tender blades will not become parched from the sun, it *will have a good start before winter comes* and will make a beautiful green covering in the spring. It should be watered frequently after the first blades have pushed their way through the earth's surface, and a very fine sprinkling a week or so after planting will aid germination. When watering is once started it should be kept up nightly.

When there is an abundance of moss on the lawn, the soil is in need of fertilization or drainage. The moss should be raked off and the spots where it

has grown should be covered with sulphate of iron, about a quarter of an ounce to each square yard. Next a covering of lime and wood ashes should be applied and left to stand until the rain or water from the hose washes it in.

When it is desired to produce a new lawn quickly, sow oats with the grass seed. The oats will appear above the surface in eight or ten days. The lawn should be kept cut closely to make the plants stool out well. The oats die down in the fall and the roots and crown will decay and furnish plant food to the grass.

When remaking an old lawn, the old sod should be well harrowed and all the old grass roots and tops removed, and the soil treated as if it were entirely new ground. The old grass and roots may be burned and returned to the earth to help feed the new grass as it appears.

Bare patches on the lawn can only be brought into good condition by digging up the surface and re-seeding. Extra fertilizer should be worked into the soil before the seed is sown and a fine sprinkling should be given. These patches are very unsightly and will spoil the appearance of what would otherwise be a beautiful lawn.

When cutting and raking the grass, save the clippings. They will make *excellent humus* and no commercial fertilizer need be bought for the sake of obtaining humus.

A layer of manure applied to the lawn in the fall, leaving it on all winter, will insure bright, green grass the following spring. A covering of wood ashes or crushed bone will also be beneficial and if manure is alternated each season with one of the last two mentioned, it will be even better.

Seed

Deal only with a reliable seedsman. A seed house which has built up a reputation on the produce from its seed is not going to keep in stock old seed which will tend to endanger its reputation. *It pays to purchase the best of seed.*

To have the seed bed well prepared before the seed is planted will give the young plants the very best start. If the soil must be fertilized after the growth has started, the plants will receive a setback by the change in soil. They should be permitted to grow undisturbed until leaves have formed.

The depth to which seeds are planted should be determined by the size of the seed. Very fine seed

often is not covered at all, but scattered lightly over the surface of the earth. One very good way of planting fine seed is to put the seed in a sifter with four times as much very fine soil as seed and sift seed and soil over the spot where the plants are to grow.

The ground should be thoroughly warm when planting seed for producing seed plants. If the ground is at all chilled, the seed produced from the plants being started will not yield a good crop of flowers.

Seed should be well watered immediately after planting. A very fine nozzle or a bulb syringe should be used in order not to wash up the small seed.

Growing plants for seed is an art. Flowers should never be considered, but every flower produced looked at with a view to the seed. Only a few flowers should be allowed to mature on each plant so that the nourishment may be conserved. A *plant bearing many blossoms will produce poor seed.*

Seeds require warmth, moisture, and air in order to germinate.

Seed should be planted in soil with good drainage. If too much moisture is allowed seed, it will rot

before it can germinate. In planting seed in the garden, the earth of the seed bed should be piled up higher than the surrounding surface.

All stones and trash should be sifted out of the soil before seed is planted. There is no nourishment in either. Very fine soil is conducive to ready germination.

In order to kill the seed of weeds in soil which is to be used for the seed bed, place the soil in a large pan and bake in the oven or at the bottom of the furnace for a few hours. There will then be no danger of the seed of weeds crowding the plant seed.

In preparing large beds for seed, plow thoroughly and rake carefully. Plowing up the land four or five times will insure loose soil and a quick growth of plants.

The seed boxes or beds should be kept slightly moist, not wet. If the soil is dry the seed cannot germinate but if really wet, the seed will rot before germination can take place. When there are dry spots these spots should be watered, but not the surrounding damp soil

Young plants will be more uniform in size and shape if seed is planted in rows and it will be much

easier to thin the plants with regularity than if they come up in spots.

When planting seed in boxes indoors, the box should be set near a window through which the sun shines. The box should be turned around every other day that the sun may fall on all parts of the soil alike.

The depth at which seed is sown should be greater later in the season than early in the spring, as the ground is warm to quite a depth and the temperature of the soil is more even farther down.

Purchase seed in good season. If one waits until time to plant, the work will be done hurriedly and the result will be unsatisfactory. When the seed is at hand, the ground may be prepared and the seed planted at the most advantageous moment with regard to climatic conditions.

When preparing the soil for the seed bed, sift it until very fine, having removed all debris, and then press it down flat with a board. After sowing the seed, press the soil down again, and this will be *sufficient covering for very tiny seed.*

When raising seeds, never keep them over season after season. A great many seeds will not germinate

at all after a year and very few will produce good plants.

A seed drill will be most convenient in planting seeds on a large parcel of ground. The use of this implement is not only more convenient, but the seed will be more regular.

Slightly damp soil is preferable for seed planting than soil which is really wet, or soil which is dry. A good test is to take a bit of soil into the hand and squeeze it. If the impression of the hand is on the soil when released it is too wet, but if the earth crumbles, it is in excellent condition for seed sowing. There is too little air in really wet soil, and *seeds require air as well as heat and moisture in order to germinate.*

The majority of seed will germinate successfully under an air temperature of 60° Fahrenheit and a soil temperature of from 65° to 70°. The soil temperature should always be a few degrees higher than the temperature of the surrounding air.

In planting seed on a hot summer day, small seeds should be covered with a board for the first few days after planting in order that they may be kept damp enough to germinate, otherwise the heat will

dry them up, blow the sand off, and scatter them in every direction.

A little system in planting flowers and seed will aid greatly the following season. Keep a record book of the date when seeds are planted, the date when they first appear above ground, the care given the young plants, etc. Jot down the age of perennials when purchased, the care given, and any detail which will be useful in planting again. The garden will be ever so much more interesting when such personal care is given it and the flowers will seem almost to have personalities.

When several different kinds of seeds are planted in one flat, plant only those of the same size, otherwise they cannot be covered or watered properly.

All seed with thick skins and all large seed with even thin skins *should be soaked over night in cold water or for several hours in warm water, not hot, before planting.* This loosens the skin, makes it shrink, and prepares the seed for quick germination. No seed will be harmed by soaking if not left in the water too long.

When the flats have been prepared for seed, furrows should be made and the seed planted at once

before the soil has dried out, or germination will be retarded.

Fresh air should be supplied to the seed boxes daily. To open a window in an adjoining room will give the necessary ventilation without danger of drafts. A draft is hard on young plants and even before the seeds are up they are endangered by a chilling of the temperature of both soil and air.

Seed boxes should not be placed in the sunlight for two or three days after the seed is planted. Moisture is the most important factor for the first period.

The proper way to harrow a seed bed is to run the harrow, rake, or fork in different directions, the second harrowing at right angles to the first, while the surface of the soil should be pulverized to a depth of several inches.

In making wooden boxes or flats in which to plant seed, do not fail to leave a little crack all around the edge of the bottom of the box, otherwise holes will have to be bored to make sure that good drainage will be supplied.

A very safe way of watering seed in flats, boxes, etc., is to place the receptacle in a tub of water,

letting it stand just long enough for the moisture to penetrate all parts of the soil. The water should not cover the flat, or box, or the seed will be washed away in a flood.

Do not sow seed too thickly. The majority of seeds will germinate if purchased from a reliable seed house, and to sow a great many more than is desired to germinate will be a fearful waste. A few in excess of the seedlings desired should be sown in case some do not germinate, but when young plants come up too thick, they will only have to be thinned out and thrown away.

Egg shells make excellent little cups for planting seeds which are not to be sown out of doors. When the seeds germinate and the seedlings have grown two or three leaves, eggshell and plant should be set where the plant is to remain. This prevents the roots being disturbed and growth checked and the shells furnish food to the soil for the plant a little later.

Seeds of most plants are ready to be gathered when the seedpods burst. The seed should be placed in the sunlight for a day or two, or in some dry place indoors, preferably behind glass through which the

sun will shine, to dry out thoroughly before storing for the next season's use.

There is now on sale in the markets seed placed inside tape. This tape is to be planted in furrows, thus doing away with the tediousness of seed sowing and also eliminating much waste of seed. Its success will depend entirely upon the quality of seed used. It is worth trying out at any rate.

Seeds planted in boxes indoors do not need to be set at so great a depth as those planted out of doors. The temperature is warmer indoors and there is not so much danger of the seed becoming dampened and chilled.

When seeds are planted broadcast, thinning must always be generously indulged in, otherwise the plants will never attain their full growth and development and the flowers will be dwarfed and sickly in appearance.

Transplanting and Thinning

Most plants that can stand transplanting are really benefited by it as transplanting has a tendency to make the plants stocky and strong, and it also affords opportunity for developing the root system.

Before taking up a plant which is to be transplanted thoroughly water the soil surrounding it that the earth may the more readily adhere to the roots. When plants are not set in the soil at once after taking up, the roots and leaves should be moistened and the plants set in a moist place until time to plant.

When plants come from a distance and the soil adhering to the roots is hard and dry, or when the earth has fallen away, place the plants in a tub of water, enough to cover the whole root system, and let stand for several hours before planting. It is best to also pour water into the hole before setting the plant in place. A good watering should also be given when three fourths of the soil has been placed around the plant.

In lifting young plants for transplanting, always use a trowel with a curved blade. A fork will cause the earth to fall apart and a level trowel will disturb the earth and to some extent unsettle the roots.

Before transplanting young plants from the greenhouse or cold frame to the open ground, harden them by giving them first a little fresh air, gradually

increasing the amount each day, until they are entirely exposed. If plants are hardened in this manner, there will be little danger of their dying after having been transplanted. The plants will require less moisture as they grow older, hence the evaporation will not be harmful.

In sections of the country which have short seasons, *plants for the open ground which will not stand transplanting* may be started in large cardboard boxes, such as are used for suits of clothes. When the plants have grown to the required height and the time is ripe for plants to flourish in the out of doors, box and plants should be set in the ground, taking care not to shake the earth and unsettle the roots. The box will soon rot and will do no harm to the roots.

There can be purchased *small paper cups in which to plant seeds which are later to be transferred to the garden.* Two or three seeds at least should be planted in each cup to be sure that cup space is not wasted by non-maturing seed. The cup should be planted in the ground and just before setting in the earth should be slit down the side to permit the roots to spread. The cup will soon disintegrate and become part of the soil.

When transplanting is being done, the soil of the garden *bed should be well watered* before the plants are set in it. If the earth does not adhere to the roots of the plants, the soil should be very wet, and dry earth may be placed on the surface after the plant has been firmly imbedded. The dry earth will give firmness and help to keep the plant in position.

Always before transplanting, the soil should be well fertilized and cultivated. If the soil is sifted, so much the better. Young roots are tender and will find difficulty in forcing themselves through hard lumps of earth.

In transplanting large plants, be sure to set them deeply enough into the earth, water the roots well, and press the soil down firmly with the foot after the plant is in position. To use a hoe may cause a bruise or break from which the plant may never recover.

Plants which are to stand a distance from each other should be fertilized independently. Too heavy fertilization may burn up the plant but *a safe fertilizer into which to dip the roots of plants being transplanted consists of a mixture of cow manure, water, and clay.* The roots should be dipped

into this and a little of the mixture also poured into the hole into which the plant is to be set.

The time for transplanting depends upon both the temperature and the condition of the plant. No plant which has been grown in a hothouse or under glass should be transferred to the garden until all frost is out of the earth. If a plant is spindly and has a yellow tint to the leaves, transplanting often will benefit it, for its appearance will indicate that it needs more nourishment.

No plant should be transplanted until at least two leaves are well formed, but as a rule two leaves are sufficient. When transplanting plants which have already a number of leaves, the larger leaves should be pinched off to give the young ones a chance to grow. They will in time be stronger and better leaves than the large ones which have grown before transplanting.

Transplanting should not be done during the heat of the day. The sun, and even the hot atmosphere, is likely to parch the plant and rob it of moisture and it will receive a decided setback. During the late afternoon, or even in the early evening, is the best time for transplanting.

When thinning young plants, do so without regard to the size of the plants. Small plants will soon attain their growth if plenty of room is given and cultivation started. The tendency in thinning usually is to retain the largest plants, discarding the smaller ones, but this should not be done when it will leave bunches of plants, otherwise the large ones will soon be outstripped by the young ones which have been given their chance.

The amount of space to be given each plant should be determined by the height to which the plant grows and whether or not it is a bunchy plant. The roots of tall plants, as a rule, grow downward into the earth, instead of branching out near the surface, hence they do not require as great a distance in proportion as a plant the roots of which spread out. *Keep in mind both the tendency of the roots and the branches when the first thinning is done.*

In transplanting young plants to the open ground, great precaution should be exercised with regard to the roots. If they are bruised it will take some time for them to heal before they will begin to grow and furnish nourishment to the plant.

When young plants are being transplanted from the hotbed to the open ground, or to pots, it should be remembered to set them a trifle deeper than they were growing previously to transplanting. The upheaval of the plant is hard on the roots and they will require an extra amount of earth to offset the disadvantage of having to be replanted.

Transplanting may be done to great advantage after a rain on a mild day. The plants should not be taken from their first bed if the air is chilly. It is a good plan to have the garden all ready and wait for a light shower.

In transplanting very delicate young plants, they should first be thinned, in order that a piece of earth may be removed with each plant. This will prevent the shock to the plant's system and it will sooner regain its strength and the difference in growth between it and one which has had no earth removed with it will be very noticeable.

Young and tender plants should be protected from the strong rays of the sun for a day or two after being transplanted. Stakes driven in the ground at each end of the bed and a board leaned on them slantingly will afford sufficient protection. They will thus get plenty of air and warmth of atmos-

phere without having the sun streaming on them and perhaps parching the leaves.

Cultivation

Some of the benefits derived from cultivation:

It destroys weeds which eat up the plant food in the earth.

It breaks up the soil and gives the roots a chance to push through without strain in their search for food.

It forms a dust mulch and prevents the evaporation of moisture.

It increases the amount of plant food and makes the food more available to the plants.

It warms the soil and permits more air to reach the roots.

It adds humus to the soil by plowing under the manure or any grass or other vegetation growing in the soil.

So do not neglect to cultivate. One or all of these benefits may be accorded to each plant.

Once a week is not too often to cultivate the garden. A garden should be cultivated after each rain or after having been watered, never just before watering, or the water will cause lumps to form.

Cultivation of perennials should not be given too early in the spring or the young roots, just getting a start, may be injured. The latter part of April or the first of May will be time enough for this work as before that time the conservation of moisture is not necessary nor have the roots grown enough to be crowded.

In a large garden, it is necessary to *mark the spots where late perennials are to appear*, otherwise many a good plant may be lost from careless digging when planting annuals. This may be done either by iron rods or wooden poles, or an accurate plan of the garden on paper will serve for the careful planter who knows his garden well.

In dry weather an extra amount of cultivation should be given. Cultivation aids when there is little water, by forming a dust mulch over the surface, and by permitting air to enter.

The best time of day for work in the flower garden is early in the morning before the dew has evaporated. The flowers are fresh, the air is sweet and invigorating, and the habit of working in the garden early will soon invigorate the human system.

Remember that cultivation is the life of flowers. Even surface cultivation will form a good dust

mulch and this mulch will help in conserving moisture.

The back often aches from hoeing not because the work was long or arduous but *because the hoe blade was not set at the right angle.* If hoeing is uncomfortable, reset the blade until it can be used with no discomfort.

Growing plants should not be neglected merely because they seem to be doing well. They will not keep on doing well unless cultivation is given and the soil contains enough plant food to nourish them. Cultivation should not, however, be carried to extremes. To constantly dig around a plant will not be beneficial.

Cultivation of the soil conserves moisture, without which plants will not flourish. Even though they may grow, the leaves will be poor and the flowers can never reach their best development.

Cultivation is of as much importance as fertilization, perhaps more. Plants will not flourish if they are set in the ground and forgotten, while frequent *cultivation will often offset the disadvantage of poor soil.*

During hot dry weather, the surface of the earth only should be cultivated. To stir up the earth to a depth of more than a couple of inches will only bring to the hot dry air the moist soil below the surface, which will very soon become dry. The surface cultivation will prevent the escape of the moisture in the earth below.

Cultivation should not be given while the earth is very wet. When wet earth is stirred up and left to dry, hard lumps will form which exclude air and through which tender roots cannot force their way. When a handful of earth will crumble readily between the fingers, it is in proper condition for cultivation.

Small plants should always be cultivated with a fork, rather than with a hoe. The hoe will be difficult to use in cultivating close to the plant, while a fork will dig all around without danger of injury to the plant or of chopping off the roots.

Weeds

Weeding should be done just as soon as the weeds start, otherwise they will in a short while eat up a great deal of the plant food which the flowers need.

When dandelions are in the garden, it will do no good to cut off the tops. The roots will flourish and send up strong growth. A drop of sulphuric acid applied to the heart of each plant will kill root as well as stem.

The deadly nightshade, or atropa, grows in waste places, often among stones, and is very poisonous. In destroying, it *should be dug up and burned*, and should be *handled only with gloves on*, as all parts of the plant are poisonous. It is of no value as a decoration.

When weeds and grass are growing in inaccessible places, make a solution of a teacupful of common baking soda and a gallon of boiling water and pour on them. This will kill them, roots and tops.

The wild carrot, or Queen Anne's lace, is a nuisance, and is difficult to get rid of. Where there is a very large patch, the land should be plowed for several seasons before using, and all roots picked up and burned. A solution of baking soda in hot water will kill it when only a small amount is to be eradicated. Its growth indicates lack of fertility of soil.

Chicory, which is usually termed a weed, *bears handsome blue flowers*, and is a welcome addition

to a garden lacking blue color. It requires a deep, rich loam which has very little clay or sand in it.

The bitterweed, also called ragweed, should be eradicated from every garden. To it has been laid the cause of hay fever, and it is not desirable for any purpose. The flowers are green and unattractive, and the stem is coarse and hairy.

Salt sprinkled on the garden walk *will keep weeds down.*

Bicarbonate of soda dissolved in hot water will be almost *instant death to grass and weeds* which insist upon growing in spots where they are hard to reach and eradicate.

Do not let dandelions get a start. They are very difficult to get rid of when growing profusely and it takes but a season to start profuse growth. *Concentrated lye diluted with water will kill the roots* but it will also kill all other vegetation with which it comes in contact and it is *poisonous* to human beings as well and should be kept well out of the reach of children, and animals also.

A pinch of dry *table salt applied to the crowns of plantains will kill the plants within a few days.*

Strong salty water may be used but it may take several applications, and also care should be taken that it does not spread to other nearby plants.

Watering

When watering flowers, water them thoroughly. Merely to sprinkle water over the surface of the earth will do little good. Water should penetrate to the roots in order that it may be taken up by them and sent through the plant.

When only the surface of the garden bed is wet, the soil will grow hard when dry and will tend to exclude air. *It is better by far to water thoroughly every three or four days than to water lightly every day.* A good rain should be imitated when using the hose or the watering can.

An excellent way to water plants is to flood the garden or the garden bed. Particularly is this good when watering young plants, plants which have just been transplanted, and seed. Flooding will cause the water to penetrate to the roots with no danger of washing up the plants or breaking tender branches. A small trench should be made at each side of the bed and the water poured into it.

If the garden is watered at night, not so much moisture will be lost to the garden through evaporation as if it is watered during the heat of the day. Watering while the sun is shining will cause the plants to become scalded, from which they sometimes do not recover.

When watering boxes in which seeds have been planted, or when watering seed in the garden bed, a very fine spray should be used, otherwise many of the seed will be washed up. A fine bulb syringe is excellent for use when watering seed in boxes.

An occasional sprinkling should be given all plants in order to wash the dust from the leaves and permit the plants to breathe.

During the spring months when there is no danger of the atmosphere later becoming overheated, *watering may be done in the early morning.*

An excellent way of watering hanging plants is to let them down into a tub of water and leave them there until the soil has absorbed all the moisture it can. The water should not be permitted to come up over the top of the pot while it sets in the water, or the soil may be washed out. The best method is to let the water be soaked up into the soil from the bottom of the pot.

In watering shrubs, trees, and large plants which have deeply imbedded roots, the surface of the earth around the trunk should be depressed below the surrounding garden in order to allow the water to stand in puddles and sink into the ground near the roots instead of running off to other surface.

Plants which are at all sensitive to disturbance should have the water applied by means of a cup, or for very young plants, a spoon. The hose, or even a watering can, sometimes disturbs the plants even if it does not actually wash them up.

A piece of pipe three quarters of an inch in diameter will serve well when watering house plants. This should be stuck into the ground until it is in close proximity to the roots and the water poured down it. In this way not only the surface of the earth will receive water but the lower part will be sure of getting sufficient moisture.

A spasmodic watering now and then during a very dry season will be even more harmful than no water at all.

Cut Flowers

The style of vase in which cut flowers are to be placed should be studied. If the vase is suited to

the flower it tends to enhance the beauty, but such arrangement as a tall vase containing short stubby flowers is out of proportion, or *vice versa*. The color of the flower always should be considered in selecting a colored vase and care should be taken not to choose a vase which has not harmonious contrast. The simpler and plainer the vase, the more pleasing the effect.

A glass flower bowl containing a glass slab with small holes into which to insert the stems of flowers will show them off to the greatest advantage. They will last longer if given plenty of room in this way instead of crowding them together in a narrow-necked vase.

Cut flowers, particularly roses, will remain fresh longer if they are given a bath up to the neck just after they are cut. It is a pity that when so much pains are taken to grow flowers that more pains are not taken to preserve them.

A little salt placed in the vase in which *cut flowers* are placed will act as a stimulant to the flowers and *keep them fresh and fragrant* days longer than if they are placed merely in cold water.

Charcoal taken from the fireplace and reduced to a powder *will prove beneficial to cut flowers* if it

is placed in the water before they are put in. When the water is renewed the charcoal also should be renewed. The charcoal should be allowed to settle to the bottom of the vase to prevent the stems and such leaves as touch the water becoming black.

When sending cut flowers by mail, cut a small white potato in pieces and slit a piece with a knife. In this slit stick the cut end of the flower stem. The moisture in the potato will be sucked up by the flower and as long as the moisture lasts the flower will remain fresh. The size of the piece of potato must be in proportion to the length of time the flower is to be on its journey and to the size of the flower.

Water Plants

May is the best time of the year for putting out water lilies. Each plant should be set in a small basket of loamy soil, in the bottom of which are several small stones. This should be sunk to the bottom of the pond or tank. If the pond is quite deep, an artificial mound should be built in for the basket to rest upon, otherwise some of the leaves may never reach the surface of the water.

Water plants will not thrive in swiftly flowing and cold water but should have still ponds, or tubs of water in which to grow. They should be given plenty of room and a small pond or pool should never contain many plants.

Below Is a List of Plants Suitable for the Garden Pool

White Water Lily
Yellow Pond Lily
European Water Lily
Watershield
Watercress
Cape Pond Weed
Water Hyacinth
Magnolia Lotus
Indian Lotus
Bulrush
Sweet Flag
Water Plantain
Iris
Double Marsh Marigold
American Lotus
Spatter Dock
Golden Club
Arrow Arum
Arrowhead
Cat-tail

The Rock Garden

If there is a running stream near your garden, make the most of it. Flowers adapted for growing in water are plentiful, and a most beautiful rockery may be built, not to mention the advantage to scenery of a seat or a summer-house placed nearby.

In making a rock garden, the stones should be carefully placed. There should be no empty spaces between the rocks. The soil should lie

firmly imbedded, and they should not be placed in such position that pools of water will form.

The rock garden should be started the latter part of February or the first of March if there is to be a show of blossoms the first season, for most flowers suitable to a rock foundation bloom in April, May, and June.

Coarse sand, well drained, is required for most *plants which grow among the rocks. A compost suitable for the needs of these flowers* is composed of two parts of loam mixed with one part of peat or leaf mold to which has been added a little coarse sand.

A good mixture of soil for the rock garden is composed of eight parts of good friable loam, two parts of broken sandstone, two parts of sand, one part of leaf mold, and two parts of well rotted compost.

House Plants

To retain the gloss on a rubber plant, pour a little sweet oil or castor oil about the roots of the plant every three or four weeks. The oil will nourish the plant and keep it in healthful condition and the gloss will be a natural result. When the plant

has once become dull and heavy in appearance, a little oil should be smeared on a cloth and rubbed over the leaves, wiping it off thoroughly that the air may penetrate the lungs of the leaves.

A pinch of mustard, half a teaspoonful to a quart of water, added to the water in watering house plants *will destroy insects of many kinds* and will not harm even the most tender of plants.

In planting the house plants in the garden during the summer, leave the plant in the pot and plant the pot as well. There will be no advantage whatever in taking the plant from the pot, and there will be the disadvantage of upsetting the root system twice during a few months.

A small plant should not be set in a large pot. A few roots with too much nourishment will be in danger from having more food than they can digest, and a sort of plant indigestion will set in.

House plants should be fertilized every three or four months and it will not be necessary to repot them more than once a year. *When plants outgrow their quarters*, they should always be replanted in larger pots to give the root system a chance to develop.

Always cultivate two or three low-growing house plants for use as a table decoration. The primrose, a fern, a pot of pansies, or violets, will be very beautiful. Orange or grapefruit seed sown thickly in a pot will make a very exquisite decoration when the plants have reached a height of a couple of inches and the first leaves are well formed.

A bushy limb placed in a pot of earth and seed of small-leaved vines planted therein will result in a beautiful plant. The vine will twine itself around the bush and soon completely hide the bare limbs. The cypress vine will be most satisfactory, as well as climbing nasturtiums.

A good liquid fertilizer for house plants is made by dissolving two ounces of ammonium chloride in two quarts of water, and adding four ounces of sodium nitrate and four ounces of sodium phosphate. The mixture should be carefully strained through three thicknesses of cheesecloth and should be used in the proportion of a teaspoonful to a quart of water. It should not be put on stronger than this or injury to the plants will be the result.

Before putting earth in window boxes or flower pots, whitewash the inside of the box or pot. This

will *prevent a wooden box from rotting* as quickly as it would if the earth were placed in it without the whitewash coating, and it will tend to keep away insects from both boxes and pots.

House plants setting in jardinières in windy places are occasionally blown over and the jardinière broken. If all the available space in the jardinière is filled with sand or gravel, it will usually be so weighted that the wind will have no effect upon it.

Lime water poured on the soil will usually kill worms. A teaspoonful of perfectly fresh lime should be put into a cup of water and left to stand until the sediment settles at the bottom. The hole for draining should be closed before the application is made on a house plant, that the water may remain in the surface soil long enough to do its work.

Dormant house plants require little moisture, but those which grow rapidly in winter in the house will need a good supply of moisture constantly. Watering should be done thoroughly, and the soil throughout should be wet. An occasional surface watering does practically no good.

Keep the soil in pots an inch below the top of the pot. This will afford plenty of room for water to

stand when watering, and the earth will not be washed over the rim.

House plants should have fresh air every day, or they will soon stop growing and perhaps die. The air in cold weather should not blow directly on them but should come through a window at the opposite side of the room. Too high a temperature and no fresh air is just as harmful to plants as it is to human beings.

In applying fertilizer to house plants, give only a small amount at a time, rather than make the soil very rich and thus cause such a sudden change in the food of the plant. When there is any doubt as to whether you have the right kind of fertilizer for a particular plant, apply just a little and watch the result. You will soon be able to tell by the growth whether or not that particular fertilizer is beneficial to the plant. *Too much fertilizer will overstimulate a plant* and there will be a reaction later.

When plants have been stored away in a cool spot in the cellar they should not be brought immediately into a very warm room. If too much heat reaches them, they will have a very rapid growth

and very little strength, and sooner or later they will suffer from it.

For a succession of bloom for house plants, pot the plants or plant the seed, at intervals of ten days or two weeks, beginning the first of September.

When house plants are placed near a window, see that all cracks are made air-proof before cold weather sets in, or you may awake some morning to find a choice plant frozen stiff by a sudden change of temperature. Plants should not be permitted to touch the window glass or frost may reach them by forming on the panes.

Dipping *a house plant* in very cold water several times will usually *rid the plant of red spiders.* The laundry tub should be filled with water and the pot immersed. The spiders will remain on the surface of the water where they can easily be killed.

In placing a potted plant on a piece of highly polished furniture place under the pot a piece of glass. This will prevent the moisture oozing from the porous saucer and leaving a white mark on the

wood. A paper or linen doily laid over the glass will perhaps make a more attractive appearance than the plain glass, and if one doily is placed under the glass there will be no danger of the glass leaving a scratch.

Dingy old flower pots may be painted with red ocher with a most pleasing result. *Flower pots should never be fancifully decorated.* The pot is meant to hold the flower, which is the true ornament, and anything which tends to detract from the plant is in direct competition. A flower will lose its charm if placed in a brightly colored pot.

When pebbles or small stones, shells, etc., are not available for placing in the bottom of pots to insure good drainage, *"clinkers" from the coal stove will answer as well.* The very small ones should be used in order not to take up too much room which should be left for earth.

When a plant is frozen, thaw it out by covering securely, not permitting a ray of light to penetrate the darkness, until the weather moderates. The plant will thaw gradually and there will be no sign of its ever having been frozen. Even very tender plants can often be restored by this method.

When plants are frozen, they should never be brought at once into a hot room, but should be placed in a room where the temperature is just a trifle warmer than the temperature from which they have just been taken. The temperature should then be gradually brought to a higher degree and this process should take two or three days.

House plants often fail to thrive from no apparent reason when what they really need is repotting. Having eaten all the food from the old soil, they require entirely new soil and the addition of fertilizer alone will not answer the purpose.

Provide potting soil when fertilizing the garden in the fall. It should be placed in a large box or in the pots and left to stand all winter when it will be ready for spring use. If the frost or even a light snow falls on it several times, and the sun heats it afterward it will be in excellent condition in the spring.

The latter part of May or the first of June is *time enough for putting the house plants out of doors* and even then they should first be brought out on a bright, sunshiny day and brought in at night for several days, until they become accustomed to a cooler temperature.

House plants should be turned around occasionally so that all sides may have the benefit of the sunlight. To leave them in one position will cause bushy plants to become one-sided, and plants of one stem will bend toward the sun instead of growing tall and straight, beside having the leaves on one side of the plant a pale, sickly shade.

House plants should be repotted several weeks before cold weather in order that they may have plenty of time to become thoroughly adapted to the new soil conditions before winter arrives. Occasionally, a plant will grow so rapidly during the winter that it must be repotted at once, hence there should always be on hand a good supply of soil for repotting or cold earth will have to be thoroughly thawed out and warmed before the repotting can be done.

The Hotbed

In order to have flowers early in the season, a hotbed should be provided. In severe climates, some plants will not have a chance to get a good start in flowering before time for the frost to appear again, while with a hotbed, the plants can grow to a fairly good size before warm weather actually comes and if transplanted immediately upon the

frost being out of the ground, a long season will be insured.

Before plants are transplanted from the hotbed to the garden, they should be thoroughly hardened by giving them at first just a little air, gradually increasing the amount of air space daily until they are entirely exposed. Hotbed plants should never be exposed after the sun has gone down until the period of all-day fresh air has been reached, then the glass may be raised during the night. When they can stand this treatment and thrive, they are ready to be planted out of doors. Not only will this method prevent plants dying from sudden exposure, but they will be much more strong and vigorous when they have attained full growth.

All watering of plants in the hotbed or cold frame should be done in the morning and preferably on sunny days. To water them late in the afternoon and close the glass down will cause them to become chilled.

The hotbed should be given a southern location that it may receive all the sunlight there is, and it should be protected on the north and east from the bitter winds. Placed near a wall or fence, or even thick shrubbery on the north and east, will

answer well, but if this is not feasible, high boards may be placed in an upright position near the hotbed.

Sacks of leaves, straw, or a bag of manure laid over the hotbed sash at night will protect the young plants in even the coldest weather. The layer of manure in the sack need not be more than an inch thick, but it should cover all parts of the sash. Double sash will be very convenient, though it will not be necessary to use it all season.

In starting ventilation for the hotbed, always raise the side of the sash opposite the direction in which the wind is blowing, or the *plants are likely to take cold.*

Several small hotbeds are more convenient than one large one, as they are easier to handle and each variety of flowers can be treated in such manner as is best suited to the plant.

When to start the hotbed depends upon the location. In a cold climate, it will be impractical to start it as early as it is started in a warm climate, for the ground will have to become thoroughly warmed anyway before the young plants can be transplanted. *The length of time*

for seed to germinate for a certain flower, and the size at which it is to be transplanted, should always be taken into consideration when starting the hotbed.

If hotbed plants are getting too much sunlight, lay a piece of thin green cloth over the sash, or cover with a coating of leaves or shrubbery. When the weather has grown warm and the plants are not yet ready to be transplanted, a coating of paint over the sash may prove satisfactory in regulating the heat.

A hotbed is not difficult to make, nor will it prove to be expensive. A hole of the size planned should be dug and the four sides well boarded that the dirt may not slip down through the cracks. A depth of two to three feet will be enough, and stable manure should be packed on the bottom. Many gardeners prefer to alternate layers of manure with layers of sand to insure good drainage. The rear boards of the hotbed should be higher than those in front, that there may be a good slope to the sash for draining rain water. After the manure has stood a couple of weeks in the hotbed, a top layer of sand six inches in depth should be placed on it, and this layer should come within six or eight inches of the sash, as most

plants will not grow taller than that before being transplanted. A little compost mixed with the top layer of sand will be beneficial. A thermometer should be kept in the hotbed while the manure is standing and should reach 120 degrees and then drop to 90 before the top layer of soil is added, when it will be time to plant the seed.

A hotbed made of concrete is there to stay and there will not have to be a renewal every few years because the manure has rotted the boards. It will not be more expensive in the long run, but the selection of site should be made carefully for it cannot be changed. In order to make a concrete hotbed there should be set upright in the ground a double layer of boards for forming the walls, just as would be done for a wooden hotbed. The concrete should be poured into this while soft and the boards left in place until the concrete has hardened all the way down.

Good drainage for the hotbed may be secured by placing at the bottom, before the manure is put in, *a four-inch layer of cinders*. Drainage is necessary if the plants are to thrive, and to place the hotbed in a well drained spot will be advisable whether or not the cinder bottom is used.

A pit is simply a large hotbed and is constructed along the same principles, except that as it is in the form of a greenhouse buried under ground, there need be no layers of manure. It should, however, have good drainage and should have a sash covering. It may be made of either concrete or wood, though concrete is highly recommended as it will not permit any water to ooze through the earth surrounding the walls. The depth of excavation depends upon the needs of the individual who is to use it, but it should always be deep enough to give good standing room.

Whenever the weather is mild and pleasant, the pit, hotbed, or greenhouse should be aired. If fresh air is not given to plants, they will be likely to have mildew form on them and possibly the plants will rot, or damp off.

THE LAWN

THE lawn is the most prominent feature of the country home. A well-kept lawn lends distinction to even the most humble of homes and it is a continuous source of delight to the occupants of the house as well as to the passersby, while an unkempt lawn with bare patches and rough spots bespeaks carelessness of habit of the person who has it in charge and is a constant eyesore. The appearance of the lawn will almost always furnish a keynote to the interior of the house. Pride in the interior surroundings cannot but spread to the exterior.

A large lawn is easy to plan. Vines, trees, and shrubbery have ample space and many varieties may be attractively dotted here and there in natural order, but a small plot necessarily demands that it be treated in a more formal way.

The lawn of generous proportions can very properly be fitted with curved walks and driveways, curling picturesquely around clumps of shrubbery and clusters of plants, but the small

plot should have paths laid in direct line from one end to the other and the less conspicuous they are the better taste they are in, as anything indicating a suggestion of a stroll would appear somewhat ridiculous.

Where there is not an abundance of room for both grass and flowers, grass should predominate, otherwise the garden will be a conglomeration of vegetation with no order and no dignity. It is true that the purpose of the garden is flowers, yet a mass of flowers in a small space will never receive the appreciation which each individual plant deserves.

In planting a new plot, or in remaking an old one, the plot should be drawn first on paper in correct proportions with regard to any irregularity in shape, and every tree, bush, or clump of bushes should be jotted down on the paper in a spot corresponding to the same location in the garden itself. Only in this way can one get an idea beforehand of just how the various ideas will work out.

The lawn is worthy of a great deal of care, yet it requires very little in comparison to other vegetation. The kind of seed to plant depends upon the locality in which it is planted. The sandy soil of the far South requires a well-rooted, broad-

leaved, yet slow-growing, turfy grass, needing very infrequent clippings, while in the heavier soils of the North and East may be planted quick-growing grass, preferably a mixture of several kinds, which should be kept cut close to the ground in order to keep it young, tender, and a fresh green in color.

A garden with an odd shape is far easier to plan artistically than the straight fifty by one hundred. Odd corners afford a good opportunity for filling in with vegetation, while the garden of strictly straight lines needs borders and beds of similar severity. Fancy borders and beds are not in good taste. Simplicity should be the keynote; flowers and shrubbery in themselves are sufficient attractions for the garden plot, and the simpler the foundation the better chance there is for displaying the real objects of beauty.

Pergolas, arches, and arbors not only provide a support for vines and clinging plants, but they furnish shady spots for the plants requiring little or no sunlight, and they add materially to the beauty of the garden by displaying at a height the vegetation which they support. Great discretion must be exercised with reference to the placing of these artificial adjuncts. Any commingling of nature with the artificial must be very carefully

handled. They should not be in a conspicuous position; the garden is not meant for their display but rather they are meant to display the garden. The small garden can afford but one and a garden of twenty thousand square feet will not afford a background for more than three while two will be better. The size of the pergola or arch must always be governed by the size of the walk which it flanks. A large pergola in a small space gives the garden a very top-heavy appearance.

An attractive seat is not only a convenience in the garden but it may be a thing of beauty as well. There is a place for one in every garden, however small. The size and style should be in proportion to the surroundings. Rustic seats are very pretty but they should be of simple line construction which they usually are not.

The construction of the walks is of the utmost importance. Cement walks are severe but they are very practical if the cement is properly mixed. If the cement is purchased already mixed, be sure that the dealer is reliable. If a walk cracks during cold weather, after a rain, it usually means that enough sand was not mixed in the cement. The artistic effect calls for a walk or driveway set a little below the level of the surrounding surface, but this is not always wise in laying a cement walk

unless there is a carefully graded slope from the center of the walk outward to permit the rain water to flow off as fast as it falls. A brick walk is very pretty, particularly after it has aged a bit and the bricks have a more or less irregular appearance. This irregularity properly comes with age and no amount of carefully careless planning will create it. Bricks are very porous and the water will be absorbed and drained down into the ground, hence it is usually perfectly safe to walk on a brick path after a rain with no fear of getting one's feet wet. A very artistic effect can be produced by the use of bricks, and the pretty soft redness of tone lends a touch of color to the garden at all seasons of the year. A stepping-stone walk is charming for use in a small space but it is not only highly impractical for a long pathway, owing to the difficulty of weeding which is best done by hand to save the edges of the garden tools, but the stones themselves suggest a tripping walk which is tiring if kept up for any distance. A path of from three to ten feet can be more attractively and more advantageously planned by the use of stones than by the use of either cement or brick. A foundation composed of a mixture of gravel and cinders will probably give the most satisfaction in the average garden. Pebbles mixed with gravel makes a

foundation easily drained and the material is so clean and pretty that even should a little adhere to the shoes and be carried indoors, it will not be strongly objectionable.

A house on the hillside creates a splendid opportunity for the landscape gardener. First, the slope must be carefully dealt with and it is to be hoped that every house planned on a hillside can have for treatment at least 15,000 square feet of garden surface. This will permit a fairly wide driveway and an additional footpath, without making either conspicuous. All small plots which are not even should be leveled to the street surface, or only a foot or two above, and under no circumstances should a small plot be terraced, or a portion of it raised above the natural level. To do so is to give the plot an effect of even smaller proportions and no part of it will show to advantage. Amateur gardeners with overdeveloped ideas are likely to make this mistake in planning a small plot on the hillside.

When there is a natural slope which would be expensive to level it is a better plan to leave the lawn sloping gently toward the edges instead of terracing a part of it and putting in steps which will only emphasize the lack of space.

The Care of the Lawn

The fall of the year is particularly recommended for starting grass. At this season the ground is thoroughly warmed and there is usually a copious rainfall to hasten germination of the seed, and enable the grass to become firmly established before winter sets in. When the grass recommences growth in the spring it takes full possession of the ground and crowds out the weeds. A lawn started in the fall of the year will endure the next summer's drought much better than a lawn sown in the spring.

To produce a closely interwoven, firm, deep, and elastic turf, a mixture of seed should be sown. If various kinds of grasses are started, the different kinds arriving at their best during different months of the year, the lawn will have a perpetual covering of green which cannot be secured when a single variety is sown.

If the birds pick up the grass seed, stretch black garden netting over the ground until the grass has appeared. If the lawn covers a good deal of space, it may be necessary to sow a part of it at a time, unless a great quantity of netting is at hand.

When moss makes its appearance on the lawn it means that the soil needs attention. It may need fertilizing or it may require better drainage conditions. Refertilizing will usually cause its disappearance.

After sowing lawn grass seed, roll the lawn to press the seed down. A fine sprinkling of water will also weight the sand and help to keep the seed from blowing away, but the sprinkling must be in very fine sprays. Rolling should precede watering, otherwise many of the seed will adhere to the roller.

In purchasing grass seed, select the best. Five pounds of good seed is worth more than ten of poor. Poor seed will not mature well and a second sowing will have to be made before successful results can be obtained. Mixed seed is usually the most satisfactory.

When watering the lawn, do a thorough job and do it late in the afternoon after the sun has gone down. Be sure that the soil is moist all the way to the ends of the roots, and then do not water it again until the soil is dry. A little water is injurious rather than beneficial.

In the sandy soils of the Southern section of the country *lawns can only be made successfully from turf or from rootstocks.* Grasses which develop underground stems are most successful under Southern conditions. The white Dutch clover can be satisfactorily used in combination with blue grass and redtop.

Newly established lawns should never be allowed to mature seed. Frequent clipping tends to stimulate the stooling of the plants rather than to interfere with their growth. During the winter a dressing of coarse litter or bone meal will be very desirable, or if the soil is poor, a layer of thoroughly composted stable manure will make for good growth.

In the early spring, the lawn should be raked with a steel-tooth rake, and all bare places seeded or filled in with turf, and the whole lawn rolled with a heavy roller to make it smooth and insure easy running for the mower *when cutting begins.*

September is a trying month for the lawn. Incessant and thorough watering should be given at this period.

When the lawn is small in area, do not cut it up into flower beds. The lawn should be the first thought, for a well-kept lawn alone is a beautiful thing. All flower beds should be around the borders.

Grasses

Among the vigorous grasses which are very effective when mixed with shrubbery is the arundo, or giant reed. This grass should have a rich soil and should be kept moist. It should be protected during the severe weather in the winter.

Hardy, tall-growing grasses with a touch of color will add to the beauty of a lawn. They should be massed around ugly angles and at the harsh lines of a building. The tall reed grass mixed with hairy sumac affords a pleasing contrast to the vivid green of the lawn grass, while the red berries of the barberry will lend a bit of cheer during the months when flowers and shrubbery are scarce.

Love grass will thrive in ordinary garden soil and requires little attention. It grows to a height of a couple of feet and is very pretty for indoor decora-

tion, keeping all winter if it is cut before it is too ripe. Seed sown out of doors will be self-perpetuating.

A pretty grass suitable for planting near a brook, pond, or in any very moist place is cotton grass. It requires very little care and the soft cottony white flowers are very beautiful in masses.

SHRUBBERY AND TREES

ALL outdoors has the advantage of flowers and tender foliage plants in the spring and summer, but during the cold, dreary fall and winter months, we have only shrubbery and trees to depend upon for beautification of the grounds, and so they perform an even more important function in life than the many varieties of flowers. To understand what a dreary life it is without trees and shrubbery during the cold days of winter one needs but to travel through some of the Middle Western States where miles and miles of country are swiftly traversed with never a view of any growing thing except a bit of straggling, ugly sagebrush here and there. One day's journey only is needed to give a fair idea of what the lack of evergreen growth means to the world. Yet we who are constantly surrounded by plant life in abundance do not appreciate to the fullest extent the immense benefit to be derived. In the South where the season is long and vegetable growth is rendered so easy, it is almost im-

possible not to have trees and shrubbery of some kind, but in the East, where millions of dollars are spent on public parks, practically nothing is done in the city backyards to promote shrubbery or tree growth, and not very much is done in the suburban towns, though a great deal of time may be given the garden for the cultivation of summer flowers. Yet it is during the winter that these plants would be most appreciated and a great deal of attention to them is not needed. Hedges of privet, barberry, box, ilex, myrtle, and many other varieties require only an annual fertilization and an occasional pruning and they stand to delight the eye twelve months in the year. Shrubbery fills a niche which flowers never can fill and evergreen shrubbery is always to be recommended where a great variety cannot be afforded. Merely a hedge around a well-kept grass plot will furnish plenty of green, though a hedge around a small yard should never attain a height greater than two and a half feet, otherwise the tendency will be to make the yard appear smaller still and the house will seem cramped for room as well. On large tracts a hedge used as a screen will be most satisfactory and a large tract can easily afford a hedge six feet or more in height, if one would like to copy the English idea of privacy. It is a much mooted ques-

tion as to whether the small yard should have a hedge at all, many preferring to have merely a grass plot, leaving out the more formidable hedge. This however is a matter of taste for the individual gardener to decide. When the hedge is eliminated, clumps of shrubbery can be made use of for marking a boundary line in an irregular manner and this will be a very attractive and natural way of making a division. These, too, should be evergreen, for a number of bare branches in the dead of winter is more suggestive of cold and death than bare spaces would be. Several plants of a single variety of shrubs planted in a clump are far more effective than single plants dotted about, and a variety of flowering plants clustered together will prove even more beautiful if caution is used in the grouping. A tall, heavy shrub should have planted near it bushes of light-leaved foliage, otherwise a somber aspect will be given the garden.

Where the boundary is marked by an unsightly fence, shrubbery planted at intervals alongside will do much to lessen the homeliness of the fence, and a stone wall will not present so cold and bare an appearance if shrubbery is planted to break up the lines. Odd buildings such as the garage, a barn, a smokehouse, etc., will not be an eyesore if beautiful shrubbery stands near, and there is no

more beautiful background for the annual than the heavy-leaved foliage which so many shrubs have.

The sphere of shrubbery extends indoors as well and many a stiff, formal living room or hall is relieved by a box of shrubbery. A house built on severe lines is given an air of grace and charm by the addition of plants with red berries and pinnate-leaves. In planting shrubbery the amateur gardener should remember always to provide for lightness of effect, otherwise he is likely to emerge from his labors with a splendid showing of cemeterial displays. The house which already has a "homey" atmosphere from the exterior can be treated to advantage with almost any variety of plants. A hedge of evergreen shrubbery to beautify the grounds in the winter will also act as a background for plants with brightly colored flowers in the spring and summer and the garden will seem to have changed its dress, while in reality it will just have a mantle thrown over the old one, and that with very little labor.

Some extremely pretty foliage plants for the indoors during the winter will add materially to the garden plan if set out of doors during the summer, leaving the plant in its pot, and this method of treatment will be very beneficial for the plant.

Many varieties of flowering plants make beautiful hedges but evergreens should be planted among them or there will be a dreadful lack of foliage in the winter, and we must take care of the winter plants for the summer can do so much for itself. One very pretty idea is to plant a hedge of hydrangea, spiræa, or other blossoming plants for the hedge, and at intervals clumps of evergreen. This will give a beautiful flowering effect during the summer blooming period and yet the lawn will not be bleak in the winter.

Of recent years a movement has been on foot to conserve the forests. The movement is looked upon by the thoughtless as being of a more or less sentimental nature, with the ultimate end of keeping intact the natural beauty which surrounds us; but it is hardly a matter of sentiment, so much more important is the practical side of the question. Without the trees we would be in dire distress sooner or later. We would find ourselves by and by at a loss for a home, or at least for many of the parts of a house and the articles needed in it, and even to-day in some sections of the country a frame house is more costly than a brick or stone house owing to the scarcity of timber and the high cost of lumber. Therefore, plant a tree! Trees practically take care of themselves. All that many

of them need is a little pruning every couple of years and an annual application of fertilizer, while some do not need even that but may be left alone season after season to produce what growth they will. The trees for the home grounds should be selected with regard to the surroundings. A tree for the flower garden should not be a spreading tree unless there is plenty of room for flowers and shrubbery beyond the shade zone. If several trees are to be planted some of them should be evergreens in order that a cheerless display of bare limbs will not be all there is to greet the eye when autumn has taken its toll; but if the plot is small and there is space for only one or two, it is better to plant a deciduous tree for evergreens are not so refreshing as new buds in springtime. In all cases the size which the tree will ultimately attain must be in proportion to the size of the garden. Nor should a large tree be planted near a window to keep out all the much needed sunlight which should be furnished to the indoors. Trees furnish a splendid background for the home and when set at a safe distance from the house the view will be very much appreciated. A house always shows to a much greater advantage if trees are grouped at a short distance from it instead of being set up against the house to aid

in breeding mosquitoes and keeping the walls damp. Nor should the trees be planted too close together. A group of trees often is advisable but there should be plenty of room between them, otherwise the roots will not be given their chance and a great deal of nourishment will need to be provided for them in order that they may make the proper growth.

A tree will always do best if planted in its natural sphere. That is, trees shipped from the South to the North will never thrive as well as a tree taken from the Northern woods, if it even lives at all. Many fruit trees are just as pretty as any other flowering tree and serve the double purpose of furnishing beauty and supplying the table with fruit.

Many of the States are working hard to encourage tree growing and they will furnish the trees and a representative to direct the planting, and when all this is offered it would seem a pity not to take advantage of it and produce a splendid crop of trees for our old age and the coming generation.

Shrubbery

Shrubbery trained to fancy shapes, such as a horse's head, a basket, a chair, etc., *is not beautiful*. It is merely a novelty and if talents must be displayed in this way, do it where it will not be constantly displayed to the public eye. Keep it in the background and draw the curtain, as it were, only to a few who will forgive.

The common mint makes a pretty border shrub, and the odor is very pleasing in the open air. It is easily cultivated and almost any soil will prove satisfactory to it. It may be propagated from seed, from cuttings, or by a division of the roots.

Borders and places where shrubbery is planted should be made very rich for the abundance of plant life will soon consume all the nourishment that is in the soil, unless avery generous supply is furnished.

The foliage of the round-leaf privet hedge is more dense and compact than the foliage of the slim, pointed leaf. This also applies to *the round-leaf boxwood plant* as against the narrow leaf.

When planting shrubs, scatter a number of perennial hardy flowering plants among them. These plants should be placed in the front and the kind should be selected so as to contrast with the shrubbery.

Plant the tallest shrubs in the rear when massing several together, and let one variety dominate a particular locality. This will give individuality to the neighborhood.

Among the shrubs which give great satisfaction and require little care are:

Wild Roses	Sumacs	Mountain Laurel
Black Alder	Pinkster	Witch Hazel

Before a shrub or tree is placed in its permanent location an outline map of the area to be treated should be made. The map should locate all existing structures, indicate the direction in which most pleasing outlooks are to be had, and also the contour of the ground to be beautified.

The aim of trees and shrubbery should be to hide all objectionable buildings and to shut out all unsightly objects maintained by neighbors, and to

locate them so as to allow an uninterrupted line of vision where the outlook is pleasing. On large estates, they should be placed in such position as will afford the greatest protection from the heavy winds.

The bays of curved walks and drives should be filled with groups of shrubs, so that if there be no natural object for the road to make a curve around, the planting will serve as a substitute for one.

Narrow-leaved shrubs should always be mixed with the heavy, sombre-looking plants. This will add cheer to the exterior and the effect will be most pleasing. The smaller specimen of the Siberian pea tree is very attractive with its rather showy yellow flowers.

All shrubs and trees should be especially well cultivated just after being planted, to conserve the soil moisture for them and to keep down the weeds. All the sod should be cut away within a few feet of all young trees and shrub clusters and the ground should be frequently cultivated with a hoe. After the trees and shrubs once shade the ground, cultivation is not of such great importance. A

deep mulch of straw or manure will answer the same purpose.

Plants that have an unusually fine shape, with leaves, flowers, or fruit of an unusual kind, *can be shown off advantageously by planting them by themselves in the open.* They should be planted around the edges, along the driveway, or close to a building. The mountain ash, weeping birch, hackberry, elm, and spiræa are among those which will be most pleasing.

As fast as the flowers of shrubs and perennials fade, remove them and let the strength that would go into the seed go into the foliage.

Very few shrubs are attractive standing alone, but when a number of specimens are grouped together, the variety produces a most pleasing effect. The shrubs with an upright habit and robust growth should occupy a central location and the smaller varieties be graduated from them. Avoid bare trunks and stalks.

Plan shrubbery so as to have a floral display each month of the year. Glaring contrasts should be avoided. Know before planting at what time of

the year the leaves of each plant will fall, or whether they remain on all winter. Every flower garden should have some evergreens.

Every landscape gardener should take Nature for his model, and conceal his own hand as much as possible. Small places must necessarily be formal, but large areas should have trees dotted here and there and shrubbery massed in bunches as it would be had it grown haphazard.

In localities where soil drifts, shrubs and hedges may be planted to break the force of the wind and prevent drifting. From actual measurements, a hedge five feet high will protect a field from wind damage for 250 feet. The Russian olive, Russian golden willow, silver berry, silver maple, and buckthorn are ornamental as well as protective.

In transplanting evergreens, do not allow the roots to be exposed to the sun or wind for even a minute. A large ball of earth should be left clinging to the roots of every plant to prevent injuring the root system. They should be set in a moist atmosphere, or the soil on the roots kept slightly damp all the while they are out of the ground. Evergreens not more than a foot in height will

thrive better after being transplanted than larger plants.

Shrubs which bloom in the spring or early summer should be pruned immediately after the flowers fade. Shrubs which bloom later can be pruned in the spring.

When transplanting evergreens from the fields or mountains to the dooryard, select small sizes and those that have plenty of room around them. Such evergreens are harder to grow, however, than those for sale by a good nurseryman, as the latter have been transplanted at least once and are hardier.

In rooting cuttings of evergreens, set the pot or box in which they are planted in a shady place and keep the roots moist. The roots should be good and strong before transplanting.

In hot weather, if any shrubs or other plants appear to be about to succumb to heat or dryness, several inches of the top-soil had best be removed from around the stem. This circumference should be rimmed so it will hold water, a few holes made with a pointed stick, and the soil well moistened after the sun has gone down. Pour in water

until the earth will soak up no more. Next, crush the lumps which have been removed and fill in the space, taking care not to pack down the soil.

The high bush cranberry makes a beautiful ornamental shrub. The berries, which ripen in August and September, are a brilliant red in color, and are often used for jelly and jam.

Chive planted around the flower bed adds to the shrubbery. It is a very pretty plan and few stop to think of it as a common garden vegetable, and while it is grown particularly for ornamental purposes it may also be used for cooking. *Parsley* makes as pretty a border for a flower bed as any shrub growing.

An arbor-vitæ tree is not only decorative but its branches act as a splendid preventative of moths when packed among woolens which are being put away for the summer.

The California privet and barberry retain their foliage all winter. The barberry has pretty red berries at a season when color is in great demand.

The wild raspberry adds pretty color to the landscape in the winter. It is medium tall and is not at all hard to grow.

The flowering almond produces a profusion of beautiful flowers that are among the first in the spring of the year. It is best suited for the foreground of shrubbery clusters near the house.

The choke cherry is a tall coarse shrub and is very ornamental when used for screening unsightly objects. The berries, or cherries, furnish excellent food for birds and if they can get plenty of them, they will not trouble other plants.

The scarlet sumac does well in dry places and when planted in clusters among coarse shrubbery it shows to advantage. Its flowers and leaves are ornamental in early autumn when they take on a purplish tinge. It produces ready effects.

The purple barberry gives a beautiful effect when mixed with the Japanese barberry. Its handsome purple leaves hold on until early winter, as do the berries, which follow closely the pretty yellow flowers. It also answers the purpose beautifully as a house plant.

Among the flowering shrubs are the following:

Mock Orange	Lilacs	High Bush Cranberry
Honeysuckle	Spiræa	Bush Magnolia

Shrubs which afford beautiful color effects for the winter are:

Ilax	High Bush Cranberry
Buckthorn	Red Dogwood
Purple-Leaved Barberry	Russian Golden Willow

Shrubs which are ornamental and which produce edible berries for the birds:

Elders	Missouri Currant	Buffalo Berry
Wolf Berry	Thorn Apple	June Berry
Dwarf Pine	Mountain Ash	Russian Olive

Shrubs forming ornamental hedges:

Buckthorn	Siberian Pea Tree	Russian Golden Willow
Red Cedar	Barberry	Hydrangea (summer only)

Some of the most desirable of shrubs are those of the heath family. Some varieties bloom throughout the winter and along into spring. They will grow best in rich soil and require little pruning; all that is necessary is to cut out the stems bearing the old flowers after the flowers have died.

The flowering currant is a native of California and is one of the finest shrubs to be found. Like most shrubs *it requires a rich, somewhat moist, though well-drained soil* in order to make the best showing.

The flowering currant is easily propagated from cuttings and the surest way of rooting them quickly is by bending the branches to the ground and covering with earth, using two small wooden pegs stuck into the ground, fork-like, for holding the branches down. As soon as a good strong root growth has started, the branch should be cut off an inch or two beyond the roots, toward the main stem.

Among the shrubs that should be pruned just after blossoming are the spiræas, jessamines, and forsythias. To prune them in the fall means that the branches which are to bear flowers the following spring will be cut away. When pruned just after flowering in the spring, they have a whole year in which to grow more shoots.

In procuring shrubs from cuttings, the cuttings should be taken from firm growth which has blossomed. There should always be a joint, or several, on the cutting, and it should be placed to root in a pot of sandy soil.

If *shrubbery cuttings* are placed in paper cups and set in the cold frame, with sash closed, *the root system will start its growth quickly.* No watering

is necessary though the cuttings should be syringed daily, and the sun should not be permitted to shine directly on the cold frame.

A young hedge should be trimmed three times during the first year to induce plenty of lateral growth. Each year thereafter, it should be trimmed twice, once in the early spring and again in the late summer or early fall.

Keep the heavy snow knocked off the flower bushes and shrubbery or they may break from being overweighted.

Trees

Small places, consisting of an acre or less, situated close to others of like dimensions, *can only be appropriately improved in a formal style. Large suburban places* or country seats should, in order to maintain unity and harmony with their surroundings, *be treated in the natural style.*

Plant a tree every year!

Late in March is a good *time to prune trees.*

A tree that everyone may have at little or no cost is *the wild black hawthorn, or Viburnum.* Its

foliage, flower, and fruit all are lovely. They flourish in the woods from Florida to Maine and live to be from fifty to a hundred years old.

In moving a large tree: First, dig around the tree, preferably when the ground is frozen, and take up a large clump of dirt. Make a wooden standard of three straight pieces of wood of the same length, nailed together in the form of a square with one side off, and place this against the tree, tying it to the trunk, after first having wrapped the tree with thick cloth to prevent bruising. Tie a rope to the corners of the standard, and fasten another rope in this loop. At the other end of the second rope, hitch a horse, or if an extremely large tree, two horses, and they will easily raise the tree. There should be ready a stoneboat or wooden platform on rollers on which the tree should at once be hauled, loosening as little dirt as possible. It can then be carried easily to the new location. Dig a hole sufficiently large for the roots to spread out, set the tree in place and pack the earth down tightly. Trim the branches to keep it from blowing over from top-heaviness, and anchor it by tying heavy wires to four sides and fastening them to pegs driven into the ground. Water the tree several times during the first two summers, by

driving an iron tubing into the ground near the roots (taking care that it does not strike the root, if possible) and pouring water down this.

Trees planted in the fall should be given a thorough watering so the roots will not dry out over winter and in order to anchor the trees in the ground, as the water freezes the roots and helps in avoiding injury from the wind by swaying.

Trees planted in the fall, the best season for planting them, should be given a mulch of leaves or coarse manure as a protection during the winter.

The oak is perhaps the most wonderful of all trees. Every person who plants an oak and tends it until a good growth is started is doing a great service to the next generation. *The maple, too, is a splendid tree*, but it is not so hardy as the sturdy oak, as it becomes injured so much easier. They are, however, much more rapid growers than the oaks.

The American elm is valuable both for street and ornamental planting. It grows rapidly and is one of the most graceful trees native to our forests.

The ashes are of rapid growth and have clean foliage. They have one drawback and that is they

produce great quantities of seed which in turn produce a crop of weedy seedlings upon the lawn.

Lindens are immensely satisfactory in the country but will not long endure the privations of street life in cities. It is *prized as a honey plant and for its timber.*

In planting trees, place them in a location where they will not cast a shadow on flowers which require sunlight. Make due allowance, also, for the growth of the branches when they will shadow all nearby plants.

The crab apple is a very ornamental tree and bears a fruit which is much desired for jelly. Its flowers are borne late in May. It stands exposure well and *will grow in almost any soil*, though good drainage should be assured. It should be watched closely in the early spring for insects and if any appear, a thorough spraying with Bordeaux mixture should be given.

Spruces should never be overlooked when selecting trees. They will grow under almost any condition of soil and climate and their rich green color and graceful habit make them a most desirable evergreen.

The bright foliage of the *Irish juniper*, and the rapidity with which it grows makes it a very *popular tree for the garden.*

The hemlock is adapted to a very moist soil and a somewhat shady location, and when trimmed regularly it makes a beautiful hedge or border plant.

The tree of heaven is of Chinese origin and will thrive in a great variety of soils. It grows very rapidly in a good loamy soil, and the leaves will often reach a length of three or four feet. It should be given plenty of room and should be planted in a location where sunlight is not needed for small plants.

The shoots which appear near the ground on the tree of heaven may be used as cuttings and rooted to produce other trees. New shoots will produce finer leaves than older trees. Trees should be pruned every second year while young and the trees trained to the desired shape at pruning time.

The tulip tree is a beautiful flowering tree which should be planted in loamy, well-drained soil. It should be carefully pruned while young in order to make a pretty, graceful tree. It grows, under

favorable conditions, to be a very large tree, often reaching one hundred feet in height.

Alternate freezing and thawing of the bark of young trees in the early spring is likely to cause sun-scald. The injury generally appears on the south side of the trunk in the form of brown blisters or black bark which decays and falls off, leaving the wood exposed.

One very effective *method of preventing sun-scald* on the young trees is to bind a wide board on the south side of the trunk to protect it from the hot rays of the afternoon sun.

When the bark on trees has become hard, it should be softened by washing it in the early spring with a strong solution of soapsuds, lye, or whitewash, which may be applied with a paint brush or an old broom. A child's toy broom will answer splendidly, being easy to handle.

San José scale may be detected by the appearance of innumerable small specks of a light gray shade. They can be removed by means of the finger nail and they usually appear on young shoots.

To follow the planting of either deciduous or coniferous trees in the extremes is not attractive. An

intermingling of evergreens with the deciduous trees is very effective, and a mixutre of conifers with deciduous trees will make screening very dense. Conifers carry an expression of warmth and life and are beautiful after the snow has fallen on them.

Deciduous trees can be planted to advantage during the months of April and May, and evergreens as late as June, though September and October are the best months. A young tree should be planted a few inches deeper than it stood before transplanting.

In manufacturing communities where there is a great deal of smoke it is best to plant those trees which will survive these trying conditions. Some very adaptable trees are the Norway maples, ashes, and poplars.

For seaside use, the pin oak, ash, poplar, and Norway maple are advisable.

Plane trees, lindens, or horse chestnuts should not be placed in a position where they will be much exposed. They *are not over hardy.*

Apple trees for shade trees along the roadside are both beautiful in flower and edible in fruit, and to plant fruit trees for shade shows a disposition toward benefiting humanity.

Nut trees require a very deep, rich, and well-drained soil.

In transplanting a tree more than eight feet high, the tops should be pruned before the tree is planted. This will balance the branching and root systems and will promote a symmetrical development of the tree. The elm is an exception to this rule. All bruised or broken roots should be cut off clean with a knife before the tree is planted.

Elms should be planted not less than forty feet apart to give the best results. *Maples* can be planted as close as twenty-five feet, while *lindens, catalpas, or poplars* may have the space reduced to twenty feet, or in special cases to even less.

When rows of trees are to be planted on the borders of the yard opposite the windbreak, it will be desirable to plow and summer fallow strips of land at least ten feet wide here.

When purchasing trees for planting, and they come from a distance, it is best to soak the roots in fresh water for twenty-four hours before planting. They should be kept in a cool, shady place or stored in the cellar if they are not too large.

For protection and quick shade there is nothing better than the poplar. They are extremely hardy and when planted with other trees which are more slow-growing may be taken out easily when the permanent trees have grown sufficiently large and transplanted to another location.

The black walnut is a beautiful flowering tree and *does well when planted on rich, moist soil*, especially near a stream. The trees are beautiful, the nuts edible, and the wood very valuable. Ten years is the length of time for it to mature.

The yellow wood tree is native to the region of Tennessee and Kentucky and is a very desirable tree for the yard. Its leaves turn to a pretty yellow in the fall and the flower is beautiful in a bouquet. It *grows moderately fast, is free from disease, and makes no objectionable litter on the lawn.*

The hardy catalpa is valuable from an ornamental standpoint and produces very valuable timber.

The horse chestnut is a very hardy tree and its flowers are unusually beautiful, though it makes a great deal of litter during the autumn and has to be guarded carefully from disease.

INSECTS AND SPRAYS

THE first requisite in spraying flowers, vines, shrubbery, and trees for bugs and worms is to know what variety of pest you are trying to eliminate. To use some one spray as a general insecticide is practically a waste of time. What is poison to one bug may be food to another. So, first, know what it is you are trying to kill and then learn what it is that will kill it. A local florist may not always give correct advice as to a solution. If he has one or two good insecticides, he may suggest them as being valuable for all nuisances. Sometimes this advice may be through ignorance, for not all flower-sellers are flower-culturists, but more often it is through the desire to sell his product and he is willing for you and your plants to take the risk.

Certain small insects such as scale often do a great deal of harm before the amateur gardener realizes that the plant is not thriving or before he has any idea what the trouble can be. Any un-

natural-looking growth on a plant should be looked after at once. Although it may not prove to be an insect, it has no place there and cannot be beneficial to the plant.

Insects cannot always be gotten rid of by one spraying. It sometimes requires patience and persistency but when they have attacked a plant it means eventually either the death of the plant or the death of the insect, and patience and persistency will have their reward.

There are two classes of insects—the sucking insect which draws the sap out of the plant, and the chewing insect which does what its name indicates and eats the leaves and stems. The sucking insects hide under the branches and leaves and are sometimes difficult to detect. Hence a complete examination should be made when pests are suspected.

When spraying for insects, the spraying should be done thoroughly, for only that part of the plant which the spraying has touched is protected and made immune. A half-hearted spraying will do little or no good for though some may be killed, the remaining ones will multiply rapidly.

Clean plants are not as likely to be attacked by insects as sooty, dusty plants, and the reason is obvious. In keeping plants clean they become

more familiar to one and even the less noticeable pests will soon be detected. Old rubbish, such as dead plants, vines, and fallen leaves, should not be permitted to lie around in piles. They not only serve as protection and food for bugs which will infest your own flowers, but they will make journeys to your neighbor's garden as well. Any unclean refuse also aids in hibernating certain kinds of worms hence the stable yard should be cleaned daily. When it is impossible for the young gardener to determine just what insect is attacking his plants he should gather a sample by picking off the leaf on which the insect is working and take it to a bug expert, or if this is not practical, some bugs may be knocked off the bush or vine into a pail or other tin and be carried to an experienced gardener for classification. It would be impossible in the space devoted to this subject to give a list and general description of even the most common of insects. A number of suggestions for getting rid of many of them, and the sprays which have proven effective in the work, are listed below:

All house plants should be examined daily for insects, and all garden plants every three or four days at least. Some insects are so minute that a very careful inspection will be necessary. Not only

the stems and top of leaves should be examined, but the under side of the leaves and the petals of flowers also should have a careful inspection.

Insects are divided into two classes with reference to their manner of working on plants: 1. Insects which eat the leaves, petals, and stems of plants; 2. Insects which suck the sap from the plant and thus cause its death.

Stone lime added to arsenate of lead and Paris green will usually prevent the foliage from becoming burned from the poisons. These poisons should never be used on plants which are within the reach of children, and adults should carefully wash their hands after coming in contact with the plants.

Plant louse can be controlled by spraying the plants on which they are found *with strong soap-suds* made by boiling half a pound of strong, yellow laundry soap in a gallon of water. The soap should be shredded before putting into the water or it will take a long while for it to dissolve.

Black leaf 40, purchasable at almost any florist's or seedsman's, diluted in proportion to one part black leaf to 800 parts of water *is very efficacious in getting rid of plant louse.*

Fungus diseases can usually be controlled by spraying with Bordeaux mixture (see index). The number of sprays will be determined by the crop of insects, the weather, and other conditions. Usually from three to five sprays will be sufficient.

When a plant is suffering from a bacterial disease, i. e., a disease caused by the multiplication of bacteria in the water canals of a plant, the diseased plant should be pulled up and destroyed that the disease may not be spread to other plants. Burning is the only safe method of destruction. The plant should not be allowed to touch other plants when taking it from the garden.

Insects that suck a plant can nearly always be destroyed by spraying with a strong solution of nicotine. This is made by boiling a pound of plug or smoking tobacco in two gallons of water, or by soaking it for twenty-four hours in cold or lukewarm water. Boiling extracts *all* of the strength, however.

Worms on plants will usually be suffocated by dusting the plant with Persian insect powder mixed with lime in the proportion of one ounce of powder to four ounces of lime. This should be used several times during the course of a week.

Worms and bugs hibernate in old rubbish, in dead vines and bushes, hence the garden should be kept clean and free from all dead and unsightly bushes and rubbish.

Tent caterpillars are among the most annoying insects and they multiply very rapidly. No chance should be lost to kill one.

A cold-water spray two or three times a day will be all that is necessary *to get rid of the little red spider* which forms tiny webs on the under side of the leaves of plants. These little insects are very tiny, resembling specks of red pepper, and they dislike moisture strongly.

Palms, ivy, oleander, and other plants are often badly attacked by scale, which sucks the life out of the plant. A good *emulsion for ridding a plant of this scale* is made as follows:

Dissolve a bar of laundry soap in a gallon of water, and bring the water to a boil. Add a half-pint of kerosene and a gill of tobacco extract, (made by boiling plug or smoking tobacco in water). Apply several times if necessary.

Spade or harrow the garden well in the fall if the plants have been infected with insects. Turn chick-

ens in and let them eat the insects as the ground is turned over.

In spraying for insects, be sure to spray into the flower or cluster of flowers, as it is there that so many tiny insects hide.

The root aphis often attacks asters, doing a great deal of damage which the amateur does not always detect until too late. If the soil is watered occasionally with *nicotine solution* (see index), it will keep this pest away. When planting asters, it is a wise precaution to put a handful of tobacco dust in the soil around the plant.

Begin spraying plants early in the season and many insects will be warded off. Particularly rose bushes should be sprayed early as their worst enemies always come at the beginning of the season.

When mice are eating the roots of bulbs or other plants, bury ashes in the ground near. Ashes should not come in direct contact with the roots of bulbs, however.

Caterpillars are easily seen and the best practice in destroying them is to *pick them off the bushes by hand* and drop them into a tin pail preparatory to

burning them. They do an immense amount of damage to plant life in a very short while

Wireworm is one of the most troublesome of pests. These worms bore into the stem of the plants below the surface of the ground, hence their damage is not easily detected. Common salt mixed with the earth will often kill them, but it should not be permitted to touch either the branches or the roots of the plant or it may prove fatal. Nitrate of soda is often used in getting rid of them.

Bordeaux mixture, which contains arsenic, makes a good spray for plants infested with caterpillars. These troublesome pests bite off the leaves of plants and are easily detected. Spraying may have to be given three or four times but it is either spray or give up the plant

The green aphis which so often attacks house plants may be controlled by spraying with a nicotine solution. This can be purchased at the florist's or made at home by boiling a pound of plug or smoking tobacco in a gallon of water.

Lime-sulphur should be used on trees which are covered with a thick, hard scale or shell. These scales are very tiny indeed but they do an immense amount of damage. The lime-sulphur should be

used only in the winter when the leaves have fallen. This is a strong spray and will injure tender vegetation.

Sweet peas should be closely watched for aphis and when any is discovered, spray the vines with a strong solution of yellow soap and water, or spray with nicotine solution made by soaking smoking tobacco in cold water for twenty-four hours or by boiling it in water for a couple of hours. Apply when cold.

Aphides or green flies may be removed from house plants by smoking them with tobacco smoke. A few glowing coals should be placed on an iron shovel or in a pan, and tobacco spread over them. The coals should be smothered so they will smoke but not blaze.

Either a solution of whale-oil soap or a thorough spraying with nicotine solution will *drive the lice from rosebushes.* The solutions should be applied early before the lice are hidden by the curl of the leaves. The solution must hit the lice in order to kill them.

Slugs can be removed only by picking them off.

Choice rosebushes should be protected from bugs when they are particularly prevalent by covering

with mosquito netting. If this netting is dyed green, instead of using plain white, the beauty of the rose can more easily be seen.

The *army worm* which can cause so much havoc in such a short period of time is a smooth, striped *caterpillar* about an inch and a quarter in length, and rather dark in appearance. The moth from which it hatches is brown with white spots on the wings. The most practical way to stop their progress in order to destroy them is to dig a furrow in front of their path and let them fall into it and pour kerosene on them. If they are already in a field, mix one pound of *Paris green* with fifty pounds of wheat bran and the juice of half a dozen oranges. Mix this with molasses to form a dough and scatter it about. They breed usually in rank grass or over-fertilized fields. *Do not let this be put where children can get at it.*

Wasps may be destroyed by placing a gallon jug containing a quart of water near the nest. The wasps will fly angrily at the jug, the hollow sound of its buzzing echoing from the jug will make it enter the jug and fall into the water. Wasps call to each other and where one goes the others follow. *Paris green* distributed on minced meat is poison-

ous to them, but this is a *deadly poison* to humans as well and should be carefully handled.

Spores and germs of diseases live in the soil when plowed under, so use the precaution of raking up and burning all dead vines, etc. Rotation is another means of checking the ravages of *insects* and diseases.

The standard remedy for San José scale is *lime-sulphur*. If this cannot be procured at your dealer's, slake 22 lbs. of fresh lime, using just enough water to cover the lime. Add 17 lbs. of sulphur which has been mixed to a paste with water. Boil for an hour in 10 gallons of water, using an iron vessel. Add enough water to make 50 gallons and strain through wire netting.

Motor goggles should be worn *when spraying trees or high shrubbery* to protect the eyes, otherwise serious trouble may result.

When the *apple blossoms* begin to fall, the fruit-grower should begin to *spray*. When the calyx lobes close a couple of weeks later, the spraying should stop.

The little brown *slug* that eats the foliage of *cherry, plum, and pear* trees in the summer-time is

not difficult to control. It can be destroyed by spraying with two ounces of *hellebore* in one gallon of water.

Pine-mice destroy fruit trees, attacking below the surface and their deadly work is not discovered sometimes before the tree is dead. Bury a little *poisoned bran* (mixed with *Paris green*) near the tree but not on the roots.

Pools of water in which lilies are raised should always contain one or more *fish to eat the mosquito larvæ.* Goldfish will add materially to the appearance of the pool as well as serve as protectors to human beings.

In localities badly infested with mosquitoes heavy vines should not be planted too near the house. They serve as hiding-places for mosquitoes and the pests will breed rapidly.

Fresh pyrethrum powder placed around flower pots *will be the means of destroying many house centipedes.* This worm eats flies, but even so, he is not particularly attractive and agreeable to have around.

Fresh manure laying around in piles will be the means of breeding any quantity of *flies.* To

sprinkle it with *powdered hellebore*, half a pound dissolved in ten gallons of water, will destroy the majority of the larvæ.

Paris green sprinkled over chopped meat and placed near a wasp's nest will mean certain death to all that eat it. This is a deadly poison to human beings as well.

Once a year, preferably in the spring when the plants are taken out, *tobacco extract should be burned in the greenhouse to fumigate it.* If there is any doubt as to insects being prevalent in the fall, another fumigation should take place before the plants go back for the winter.

Six ounces of *sulphur* for every one thousand cubic feet *is an excellent disinfectant for insects.* The greenhouse should be closed tight and all cracks stopped up, first having removed the plants.

Angleworms are a friend to the gardener. They help to cultivate plants by their burrowing and they make humus by drawing leaves and plants into their holes and burying it. Hence angleworms also should be insured a long life.

Poisoned bran scattered on the ground near plants which are infected with cutworms will soon cause

the death of many of them. Here, again, caution should be exercised that the poison may not come in contact with children or with adults who are ignorant of its presence.

When a greenhouse has been infected with insects all good plants should be taken out and the house thoroughly *disinfected.* Burning six ounces of *sulphur* to every one thousand cubic feet of space and keeping the house tightly closed for twenty-four hours will destroy any insects. Any plants infected should be destroyed, and this can be done by leaving them in the greenhouse when the disinfecting is being done.

Hydrocyanic gas is a most dangerous fumigant and should never be used except by experts.

Tobacco extract can be procured at almost any dealer's and is safe and satisfactory to use as a disinfectant. It should be burned once every spring in the greenhouse as it is *very effective in destroying plant lice.* The plants should be taken out first.

The mealy-bug is a soft, white bug with a cottony appearance. It usually attacks plants which have soft wood stems and the *plants should be sprayed with kerosene emulsion.* (See index.)

Rose bugs may be sprayed with arsenate of lead solution (see index), but the most effective way of getting rid of them is to take them off by hand, knocking them into a pail of kerosene emulsion by means of a wooden spoon or paddle.

Arsenate of lead solution, hellebore, or Paris green are effective *in destroying caterpillars.*

A little *nitrate of soda* worked into the surface of the earth *will invigorate plants* which have had a setback from being *attacked by borers, root-maggots, or other insects.*

To exterminate chickweed which becomes such a nuisance when it once gets a good start, spray with a solution of sulphate of iron by means of a hand sprayer

The following *remedies* are effective in getting rid of *blight, mildew, leaf-spot, and rust:*

Bordeaux mixture
Lime-sulphur
Ammoniacal solution of copper carbonate

The *fly* should be swatted before he becomes a fly. *They breed readily in manure* and the manure should be treated with borax, a heaping pint measure of borax to every eight bushels of manure.

The borax should be applied with a flour sifter or other sieve and two or three gallons of water should be sprinkled over the manure after it has been treated with the borax.

Sprinkling manure with a solution of half a pound of powdered hellebore dissolved in ten gallons of water will destroy from eighty-five to ninety per cent. of the *larvæ or maggots which produce flies.*

In sprinkling large quantities of *manure* with *borax* it should not be used in greater quantity than fifteen tons to the acre or damage to the vegetables to which the manure is applied may result.

To control the *Hessian fly*, try burning all stubble and clearing all refuse from damp places.

To destroy the *small black fly* which feeds on the *pear and cherry trees*, spray the trees with *arsenate of lead* in water, in the proportion of two pounds of the poison to fifty gallons of water. If the application is not made until the fruit is well under way, it will be safer to use white hellebore instead of arsenate of lead.

One disadvantage in using Bordeaux mixture is that it discolors the foliage and causes the fruits

to have a russet appearance, hence whenever possible it should be used before the foliage has a good start. *Lime-sulphur can often be substituted for Bordeaux mixture.*

Arsenate of lead or Paris green can be used with Bordeaux mixture or lime-sulphur sprays thus making a combined fungicide and insecticide treatment. Both of these sprays are poisonous and should be kept out of the reach of children.

There is no danger from burning the foliage with arsenate of lead nor will it wash off when the rain pours on it. It may be purchased in either paste or powder form and may be used as a dry powder or made into a solution according to the directions which accompany each package.

When the cucumber beetle attacks vines, spray with Bordeaux mixture or arsenate of lead solution. Tobacco dust sprinkled over the vines will tend to keep these bugs away.

Arsenate of lead should be used as a spray *when asters are attacked by the aster beetle.* Many of these bugs can be picked off by hand and they should be dropped in kerosene emulsion at once.

The *toad* is the gardener's best friend. Never kill one. In three months he *will devour* ten thousand insects, among which are *beetles*, *worms*, *snails*, *spiders*, *grasshoppers*, *crickets*, *weevils*, *moths*, *caterpillars*, *wasps*, *yellow-jackets*, *ants*, and others. It never eats food without life. It can live two years without eating but cannot live long under water, and it can lay more than a thousand eggs a year. Cultivate toads.

Angleworms do not harm plants. Instead they bring good soil to the surface and mix it with the other soil. They draw leaves, grass, etc., into their holes and *make humus* and when they die they fertilize the soil with their bodies. Robins would eat more fruit than they do now if they had not angleworms to feed on.

To protect tomato plants from the cutworm, wrap pieces of paper around the stem of the plant for about two inches below the soil and a slight distance above. Poisoned bran scattered on the ground near the plants will kill the cutworms. Be careful not to get it on the leaves of the plants.

Birds eat many of the *harmful insects.*

Insects are usually most prevalent on the young twigs of plants and it is there the spraying should

be most carefully done. To spray half-heartedly will do no good.

In spraying flowering trees or vegetables, be careful to get the mixture into the flower clusters. The spray should be directed from every angle.

Jack *Frost* is the champion *pest eradicator*.

Fall plowing with some *hens* following the plow is a good way to get rid of many hibernating *insects*.

SPRAYS WHICH EVERY GARDENER SHOULD KNOW HOW TO MAKE

Bordeaux Mixture

Dissolve 4 lbs. of copper sulphate crystals in 2 gallons of hot water, using a wooden container, or dissolve by suspending the crystals in a coarse sack in a half-barrel of water.

Slake 4 lbs. of fresh lime in a wooden tub or half-barrel, adding slowly just enough water to insure thorough slaking. When slaked, enough water may be added to make the mixture of the consistency of cream.

When cold, strain lime mixture through a wire strainer into the barrel and add enough water to

make 25 gallons; dilute the copper solution with enough water to make 25 gallons and pour it slowly into the lime mixture.

Self-Boiled Lime-Sulphur

Place 8 lbs. of fresh stone lime in a barrel and slake, using no more water than is necessary. As soon as the heat has generated, sift in 8 lbs. of sulphur flour and stir into the lime solution thoroughly gradually adding more water to make a thick paste. Heat for fifteen minutes, then cool by adding more water. Strain into a barrel and add enough water to make 50 gallons of the mixture.

Potassium Sulphide

Dissolve three ounces of potassium sulphide in 10 gallons of water.

Corrosive Sublimate

Dissolve 2 oz. of corrosive sublimate in 15 gallons of water. (Very poisonous.)

Formaldehyde Solution

For spraying potatoes, 1 lb. of formaldehyde to 30 gallons of water.

For onion smut, 1 lb. of formaldehyde to 16 gallons of water.

For seed bed, 1 lb. of formaldehyde to 12½ gallons of water.

Paris Green

Slake ⅔ lb. of quick lime in enough water to answer the purpose; mix ⅓ lb. Paris green with a little water until it is of a creamy consistency, and add to the limewater; add enough water to make 50 gallons.

Arsenate of Lead Paste

Dissolve 3 lbs. of arsenate of lead paste in 50 gallons of water.

Arsenate of Lead Powder

Mix 1½ lbs. of arsenate of lead powder with enough water to make a creamy consistency and add enough water to make 50 gallons.

Hellebore

Steep 2 oz. of hellebore in a pint of water and gradually add more water until it amounts to 3 gallons.

Whale-oil Soap

Dissolve 2 lbs. of potash whale-oil soap in a gallon of water for use in the summer months; for winter use dissolve 1 lb. of soap.

Kerosene Emulsion

Dissolve ½ lb. of good hard soap in a gallon of hot water. Churn this until it becomes thick, then mix with 2 gallons of kerosene.

Bordeaux Arsenate of Lead Mixture

Mix 3 lbs. of lead arsenate powder with 50 gallons of Bordeaux mixture.

THE COLOR SCHEME

THE color scheme of the garden, however small it may be, is deserving of any amount of consideration. The difference in the general aspect of the garden which has been carefully laid out in color before planting, and the garden planted without regard to the combination of colors and the size of the plants grouped together, is quite as noticeable as the difference in exteriors which have been carefully studied and those which have been carelessly put together.

A little judicious selecting of plants will enable even the amateur gardener to have a succession of blossoms throughout the seasons, as well as a splendid showing of bright colors out-of-doors during the cold months. The garden color scheme should always harmonize with the exterior of the house. The beauty of an old-fashioned, colonial exterior will be emphasized by a planting of flowers which grew in the garden a hundred years ago, and the planting for a house built on Spanish Mission lines should consist largely of palms, shrubbery, and heavy foliage plants. A little white house with green shutters has its dainty effect carried

out in full if light-leaved foliage is massed around the doorway and the colors most prominent are soft pink, white, and green, or blue, pink, white, and green, or some other delicate combination. A large house with a dark, heavy exterior needs gay, bright, even giddy colors to strike a balance and create a cheerful atmosphere. A house gray in color makes a good background for geraniums on the cerise shade growing in the window boxes, with English ivy tendrils hanging gracefully down, and a mixture of white, delft blue, and cerise somewhere in the yard. Unharmonious colors should not be grouped together in the garden any more than they should be combined indoors in wall paper and draperies. The secret of a beautiful garden lies just as much in the grouping together of colors as in the care given the plants. When there is not enough space to separate shades which do not harmonize, an abundance of green planted between them will prevent a clash of colors, and if the effect of the general landscape plan will not be marred, the foliage plants should be tall enough to entirely shut off the view of one color when looking at the other.

The midsummer color scheme is easily planned as this period produces a wonderful variety of flowers of all shades and sizes, but the plan for

spring and fall is more difficult. Fortunately in the spring we are gratified at having any sort of display of flowers which first herald the approach of warm sunny weather after the bitter cold just experienced, and they are given double the appreciation they really deserve, or that would be given them later in the season, and thanks to the various lilies, *i. e.*, the hyacinth, narcissus, daffodil, crocus, lily-of-the-valley, and also the magnolia, we are not without plenty of variety in color, though the variety in species of plant is limited.

The fall flowers are not so inspiring but we have up to this time been so abundantly supplied with color that we are willing to accept the variety which stays with us until cold weather has shown its intention of taking up its abode in our midst. The fall flowers usually are pronounced in color, thus does Nature provide cheer during the season when the leaves begin to fall, and yet it is not time to stay indoors. Cosmos, salvia, cannas, dahlias, petunias, marigolds, nasturtiums, zinnias, and chrysanthemums do their best to lend cheer to the cold chilly atmosphere of autumn, and all of these plants will flourish with little care, though there are such wonderful opportunities afforded for developing the chrysanthemum that it would be a great pity not to take advantage of them.

Rhododendrons have heavy leaves and when grouped together on a small lot they make an effective screen, but they should have some relief near in the form of lighter-leaved foliage.

In planting flowers of the same primal colors but of different shades, it is well to keep the more pronounced colors away from the daintier hues. For instance, a deep red near a delicate pink will have the effect of absolutely killing the pink and making what might, under more favorable surroundings, be a beautiful blossom appear to be a washed-out, sickly looking flower.

The colors which harmonize in clothing may safely be combined in flowers, for, after all, color is color whether it be indoors or out. An abundance of white is always desirable as it not only brings out colors but it will neutralize even very harsh effects.

In roses, perhaps more than in any other one flower, we have a wide variety of shades in the different colors represented, but the amateur does not usually stop to consider this when planning the rose garden. He feels that a rose is a rose and that roses properly belong in the same location whether or not that handsome, rich Jack rose is going to destroy the beauty of the delicate tea or La France. A rose garden is something to be

desired but it is not beautiful when *en masse* unless great care has been exercised when placing the bushes. The size of the bush, too, will play its part. Pruning roses is advised but if all bushes are to be cut to one or two stems each year in order to produce one or two very fine buds there will be a lack of color in the rose garden, and the fact that one or two fine buds will soon shatter and there will be no chance for more to blossom forth should be considered when pruning. It does seem a pity to sacrifice so much of flower and foliage merely to produce one or two unusually fine rose buds. In selecting evergreens there may be procured beautiful shades of grayish blue and bluish green in the spruce, and soft yellows and greens in the cedar and arbor-vitæ. Barberry, hawthorne, buckthorn, and holly will furnish red and the much-to-be-desired andromeda floribunda with its cottony white berries is beautiful alike for the garden and for cutting to mix with other flowers in a vase.

For the window boxes there should be vines as well as plants unless the plants are spreading in habit. The English ivy is always satisfactory here and particularly when the flowers are a deep shade, while the pretty little green and white king geranium is lovely when planted among the more delicately shaded flowers.

And do not forget that the color of the paint used on garden accessories will have its effect on the general color scheme. The color of pergolas, arches, and seats, as well as fences, and the color in paths is going to go far toward making or marring the garden. Painted a glaring white these objects will be very conspicuous, and they were never meant to be conspicuous. They are there for a practical purpose and should never come to the fore. A bright green will seldom harmonize with the green of the foliage, but a soft gray green will not be so noticeable, and soft shades of gray may be used to advantage.

Garden sticks with conspicuous figures, such as birds and flowers painted in gay colors, lend color to the garden and perhaps they are all right if one can't have color in flowers. A garden, however, is meant to display flowers and not the handiwork of someone who can carve a piece of wood into a fantastic shape.

The shady places should be carefully looked after. It is not difficult to get plenty of color for these spots, though, as a rule, they are treated to a dull sombre green. The shady spots, more than the sunshiny locations, require color, and warm colors will lend cheer to the surroundings.

MISCELLANEOUS HINTS ON GARDENING

An outfit for the gardener should include the following tools if he would do good work without being hampered:

A trowel.
A small hand hoe.
A thinning or weeding hook.
A hand weeder.
A garden fork.
A pair of pruning shears.
A thermometer.
A cut-steel rake.
A measuring pole.
A watering can.
A large spoon.
A bulb syringe.
A house-plant vaporizer for spraying insects.

A French watering can has an exceedingly long spout and *will save the back in watering small plants.* Nearly all seed houses carry garden tools.

A self-watering window box will prove most valuable when one wishes to close up a house for a week or two. The water may be poured into the bottom of the box and by means of small holes it will be sucked up by the soil as the plant needs it.

Heavy plants, such as palms, ferns, etc., may be placed on a rolling stand and moved easily anywhere

about the house. Plants which should be occasionally transferred to the sunlight, but which ordinarily remain in a room, will be much more likely to receive the necessary attention if one of those stands is procured. They are very inexpensive.

Inexpensive and attractive wire plant stands are prettier than the old-fashioned wooden ones, and have the advantage of everlasting wear and lightness of weight.

There are now manufactured waterproof fibre saucers for flower pots which will not absorb moisture and cause a highly polished piece of furniture to be marred. They are unbreakable, hence will last a lifetime, and are very attractive in appearance. They come in various sizes.

A self-watering hanging flower pot saves the floor from drips and as a large quantity of water may be applied at one time, the plants will not require such careful attention.

A wheel hoe will be a most convenient implement *in cultivating rows of large tracts for the garden.* It makes cultivating a very easy task and *there will be no dreaded backache* for one who is subject to this trouble.

Hotbed and cold frame sash can be purchased at a slight cost when unglazed glass is used, and unglazed is quite as good as glazed so far as the health of the plants is concerned.

A metal rubbish burner in which may be collected leaves, paper, and rubbish *will save making an unsightly spot on the lawn*, and there will be no danger of burned particles blowing around over the garden.

Horse-radish roots will grow tender green shoots when placed in water. The long pieces of the roots should be split lengthwise and placed in the water with the cut side down, or little knobs may be cut which will branch out prettily and each form a separate little plant. The water should be changed every three or four days. This will make *a most novel and attractive table decoration*, which will prove quite a surprise to those who do not know about it.

Attar of roses is made from the petals of the damask rose and other roses grown in Bulgaria, India, Persia, and the south of France. *Geranium oil* is obtained from the leaves of the pelargonium, which is cultivated in Spain and Algeria. *Oranges, tuberoses, jasmines, and violets* are grown in Grasse,

France, for the purpose of making perfume bearing the same names. *Peppermint, spearmint, wormwood, sassafras, wintergreen, birch, spruce, white cedar, and tansy* are grown in the United States, principally in the Eastern States, for their *oils*.

The goldenrod is commonly known as the national flower of the United States, but as its claim lies chiefly in the fact that it is found in profusion in every State in the Union, and as there are other flowers having the same claim, there seems little reason for adopting it as the national flower. It is not very pretty nor has it any fragrance, and it bears the dreadful stigma of causing hay fever. *The columbine is much preferred by many*, and has the added attraction, aside from that of thriving in all parts of the country, of producing *red, white, and blue flowers*, which lend themselves readily for decoration on our national holiday.

The ribs of an old umbrella will make a scarcely visible support for gladioli, dahlias, vines, and other flowers requiring bracing or place to climb upon. An old umbrella with the cloth torn off will be a thing of beauty when covered by a flowering or pretty-leaved vine.

When the garden tools are dull, take the time to

have them sharpened. Tools used season after season must have some attention paid them.

When grafting on a cold day, have ready a liquid grafting wax to apply at once. This work had best be done on a mild day.

Hardy annuals may often be preserved throughout the winter if they are covered with a mulch of straw and manure. They should have coarse and loose covering, permitting some air. Leaves, boards, and boughs of cedar and pine may be used. It is well worth while protecting many hardy annuals as they will bloom much earlier in the spring of the following year than annuals started that season.

Do not hesitate to prune the flowers. Rank growth means poor flowers, lacking both color and size. Nearly all perennials and some annuals are benefited by pruning.

All dead flowers should be taken from the bush in order to give the other buds a chance to receive all the moisture and nourishment supplied by the roots and stems. Many plants will cease flowering when dead flowers are left to go to seed.

If your neighbors have rabbits or chickens, prepare for them. While it hardly seems fair to have to

feed the neighbors' pets and poultry, it will safeguard your own flowers. Plant sunflowers for the chickens and a few heads of cabbage for the rabbits and they will not molest the flowers. The safest protection is a well-placed wire fence, though this may not be desirable.

Keep pruning instruments sharp, that there may be no rough ragged edge on the plant causing a wound. A coating of paint applied to the cut while the wound is healing will keep too much sap from running out, tending to bleed the plant to death. In many ways plants are to be treated like human beings.

All waste foliage after pruning should be burned and thus returned to the earth in the form of wood ashes, helping to supply plant food.

Stake all tall growing plants that are likely to become bent or blown down by the first strong wind. Not to stake them until they are already bent or blown over may mean hard work to straighten them, even if they are not actually broken in half. A garden with *a profusion of neglected flowers is not at all attractive.*

Do not cut off all the foliage when pruning a perennial. Enough leaves should remain to furnish

air cells for the rest of the plant, otherwise it will not flourish.

Keep in a convenient place a ball of twine and a pair of shears. A pair of old leather gloves may well keep company with these articles for work in the garden will soon cause the *hands to become roughened and red if not protected.*

A cutting will always be stronger and root more easily if it is made from a piece of the main stem from which a shoot has branched. This cutting, in the form of the letter "T," should be inserted in the earth, laying the main stem flat down and leaving the newer shoot sticking up.

Study the nooks and corners of your garden, the shady places, and the sunny spots, and plant in each location a flower suited to the natural conditions. This is the only way to get really successful growth in plants.

Green raffia, which is very inexpensive, will be excellent *for use in tying plants to a stake.* It is soft and will not cut or bruise tender stems, and it is also strong and inconspicuous.

Many plants do better and present a better appearance if instead of tying to a stake they are supported

by three or four stakes driven into the ground around them, slanting outward from the base and fastened together by means of a piece of raffia or green cord.

Perennials which have stood in the same spot for several years *will be benefited by having their roots divided.* The old roots should be discarded and the young ones reset in soil which has been freshly fertilized with rich, well-rotted manure.

It is best always in growing flowers from cuttings to procure cuttings from different plants, as some flowers will not mature under self-pollination, and *nearly all flowers produce a finer variety of color, and are also larger, when cross-pollination has taken place.*

When there are more seedlings than desired, exchange with friends for some flower which they have and you have not. Usually they will be only too glad to make the exchange. To arrange with a neighbor beforehand with regard to what plants each one is to start, will effect economy in seed and labor.

If there must be a fence between your lawn and your neighbor's, make of it an attractive thing.

Plant a hedge alongside, or train vines over it. By arrangement with your neighbor, this fence may be a boon to one or both of you. It may even prove a hedge in itself and give protection from strong north or east winds.

Paint trellises, lattice-work, etc., which are to have perennial vines trained over them. Painting will keep them from rotting out as soon as they otherwise might, and the vines will not be disturbed for a much longer time than if unpainted supports are used.

When the kitchen window is exposed to the street and the gaze of passers-by, set a trellis a few feet away and train vines over it. The honeysuckle and hop planted together will provide an abundance of foliage and delightful fragrance.

Where there is a cat, there should always be a pot of catnip growing in the house in the winter, and a bunch of it out-of-doors in the summer. This shrub is not only a pleasure to cats but is also very beneficial to them, as it is their natural spring tonic.

In setting a wooden post, dig a hole and nearly fill it with concrete. Place the post in this and pour

in more concrete, allowing it to harden. The wood will last almost indefinitely instead of rotting after a few seasons. *The posts of summerhouses should be protected* in this way for summerhouses are expensive and difficult to repost safely when once the legs have rotted.

All new plants should be labeled by writing the name in indelible ink on a smoothly whittled piece of wood and tying it to the plant by means of a very fine wire, taking care not to twist the wire on too tightly or the plant may receive a bruise. It is well to use both the botanical name and the common name in order to become really familiar with the flower, as many catalogues refer only to the botanical name in listing flowers.

In planting flowers among the vegetables, the following list will prove a satisfactory combination. No perennials should be included or they will be in the way when preparing for planting the following spring:

Asters	Gladiolus	Phlox
Alyssum	Larkspur	Poppy
Calendula	Mignonette	Four o'clock
Cornflowers	Nasturtiums	Portulaca

Unless seed is required, cut off the flowers of all perennials as soon as they have stopped blooming. No plant can flourish and give the best result

in flowers with a great number of dead or dying blossoms still on their stems.

A flower box for the kitchen window or back porch will be likely to get plenty of attention from the kitchen worker. It is so easy to care for flowers when fork and water are at hand, and the laborer in the kitchen is entitled to the pleasure to be derived from cultivating flowers.

A good depth for an indoor window box is twelve inches. The bottom of the box should be covered with stones and broken pottery to give drainage and this should be covered by a layer of moss to prevent the soil from working down through the stones. The drainage and moss should take up about three inches of space. The greater the body of soil above the moss, the more uniform it may be kept as to moisture. The soil should come to within half an inch of the top of the box.

The indoor window box should be made to just fit the window. To get as much light as possible it should be level with the window ledge. There should be a drip pan beneath to keep the water from soiling the floor.

A permanent method of tagging flowers with their names is to write the name on a small slip of paper,

place inside a tiny glass bottle, thin enough to read through, and tie the bottle on the bush, open end down. There will be no danger of the rain washing the name off nor of the paper becoming water soaked. Small medicine bottles such as contain pills may be utilized for the purpose.

A rubbish heap is always useful and very convenient if not abused. All old plants, vines, and refuse from hedges should be piled on this heap and when well decayed will make valuable mold for the plants. The pile should not be littered with old boxes or barrels or tinware.

Save all old boxes, barrels, and odd pieces of wood and burn to *ashes for the flowers.*

To one who works in a garden, a kneeling basket is a great comfort. An old piece of matting, doubled and stitched together, turning up the edges on three sides, will answer splendidly. To bind the edges with a piece of tape and make a cushion for the bottom, will insure a long life for the basket and make kneeling easy on the knees. The protection to the clothing cannot be estimated.

A basket and a pair of shears should always be taken along when going into the garden. There is always some pruning to be done though it may

be only to take off dead flowers, and cutting with scissors is better for the flowers than pinching with the fingers.

A long pole with a hook on the end makes *a very convenient device on which to hang the garden basket.* It will enable one to have the basket at a convenient height instead of having to stoop to the ground for it so many times in the course of an hour.

When *choice plants* must be brought into the room *where there is a great deal of dust and where gas is burning,* a glass cover placed over them will afford great protection. There should always be air spaces in or around the cover and it should not remain over the plants permanently.

Ashes provide potash and hence are valuable for all flowers which are grown for their odor, as potash is a perfume producer.

Keep all tools well edged. Dull tools will rebel and will not do quick and effective work. Have a place for the tools and garden hose and keep them there. Have system in the flower garden as well as in the vegetable garden and the home.

Cement colored with red ochre for making *a garden walk will give it a warm and genial hue.*

In making a gravel path, a good drainage foundation can be made by placing under the gravel a layer of cinders two or three inches deep.

Stone and cement walks should be placed a little higher than the surface of the ground in order that the water may drain off as fast as it falls. Walks laid a little below the surface are more attractive probably, but if one would avoid wet feet and bad colds, a little more practicality and a little less artistic sense should be displayed.

Asparagus roots, planted for the growth of the tops, will yield splendid results when making up a bouquet of flowers that have little or no *foliage.*

The leaves of carrots make very pretty foliage when mixed with flowers which have no foliage.

The leaves of beets lend a touch of color to a spot which is in need of it. When planted among the flowers few will recognize them as the common vegetable beet. They should not be set nearer than four inches apart and should be well fertilized that they may grow rich, handsome leaves.

Water cress added to the collection in the tank will not be thought of as a vegetable and it well repays the gardener for his trouble, branching out prettily as it does.

A LIST OF THE COMMON AND BOTANICAL NAMES OF THE FLOWERS MENTIONED HEREIN

(In cases where the botanical name is generally used, it has been given in the list as the common name.)

Abutilon	*Abutilon*
Achillea	*Achillea*
Ageratum	*Ageratum*
Alkanet	*Anchusa*
Alyssum, Sweet	*Alyssum maritimum*
Anemone	*Anemone*
Arbor-vitæ	*Thuya*
Arbutus	*Arbutus*
Aster	*Callistephus hortensis*
Azalea	*Rhododendron indicum*
Baby's Breath	*Gypsophila*
Bachelor's Button	*Ranunculus*
Balloon Flower	*Platycodon*
Balsam	*Impatiens balsamina*
Begonia	*Begonia*
Bellflower, Japanese	*Platycodon*
Blanket Flower	*Gaillardia*
Blazing Star	*Liatris Scabiosa*
Bluebell	*Mertensia*
Bougainvillea	*Bougainvillea*
Bridal Wreath	*Francoa ramosa*
Butterfly Flower	*Schizanthus*
California Bluebell	*Nemophila*
Calliopsis	*Coreopsis*
Campion	*Silene*

Candytuft	*Iberis*
Canna	*Canna*
Canterbury Bell	*Campanula medium*
Carnation	*Dianthus*
Castor Oil Bean	*Ricinus*
Catchfly	*Silene*
Chrysanthemum	*Chrysanthemum*
Clarkia	*Clarkia*
Cobæa scandens	*Cobæa scandens*
Cockscomb	*Celosia*
Columbine	*Aquilegia*
Coneflower	*Rudbeckia*
Cornflower	*Centaurea*
Cosmos	*Cosmos*
Crocus	*Tecophilæa*
Cyclamen	*Cyclamen*
Dahlia	*Dahlia*
Daisy	*Bellis*
Dianthus	*Dianthus*
Dragon's Head	*Dracocephalum*
Dusty Miller	*Agrostemma*
Edelweiss	*Leontopodium*
Elephant's Ear	*Begonia semperflorens*
Ferns	*Different name for each variety*
Feverfew	*Parthenium*
Floss Flower	*Ageratum*
Forget-me-not	*Myosotis*
Forsythia	*Forsythia*
Foxglove	*Digitalis*
Freesia	*Freesia*
Fuchsia	*Fuchsia*
Gaillardia	*Gaillardia*
Gardenia	*Gardenia*
Gentian	*Gentiana*
Geranium	*Geranium*
Gladiolus	*Gladiolus*
Godetia	*Godetia*
Gold Dust	*Alyssum*
Golden Bell	*Forsythia*
Gourd	*Cucurbita*

Gypsophila	*Gypsophila*
Heliotrope	*Heliotropium*
Hibiscus	*Hibiscus*
Holly	*Ilex*
Hollyhock	*Althæa rosea*
Honesty	*Lunaria*
Honeysuckle	*Lonicera*
Hop	*Humulus*
Horse Chestnut	*Æsculus*
Hyacinth	*Hyacinthus*
Hyacinth, Grape	*Muscari*
Hydrangea	*Hydrangea*
Indian Nettle	*Lantana*
Indian Shot	*Canna*
Iris	*Iris*
Jacob's Ladder	*Cobæa scandens*
Jessamine (or Jasmine)	*Jasminum*
Lantana	*Lantana*
Larkspur	*Delphinium*
Lavender	*Lavandula*
Lilac	*Syringa*
Lily	*Lilium*
Lily-of-the-Valley	*Convallaria*
Lily, Tiger	*Lilium tigrinum*
Lily, Water	*Nymphæa*
Lobelia	*Lobelia*
Love-Lies-Bleeding	*Amarantus*
Lily Tree	*Magnolia*
Lupin	*Lupinus*
Madwort	*Alyssum*
Magnolia	*Magnolia*
Maltese Cross	*Lychnis Chalcedonica*
Mallow	*Hibiscus* *Lavatera* *Malva*
Marguerite	*Chrysanthemum fretescens*
Marigold	*Tagetes*
Marjoram	*Origanum*
May Flower	*Epigæa repens*
Michaelmas Daisy	*Aster*

Mignonette	*Reseda*
Milfoil	*Achillea*
Mint	*Mentha*
Mistflower	*Eupatorium*
Mistletoe	*Viscum*
Mock Orange	*Philadelphus*
Monkshood	*Aconitum*
Moonflower	*Ipomœa bone-nox*
Narcissus	*Narcissus*
Nasturtium	*Tropœolum*
Nemophila	*Nemophila*
Oleander	*Oleander*
Palm	*Palm*
Pansy	*Viola tricolor*
Pearl	*Achillea*
Peony	*Pœony*
Periwinkle	*Vinca*
Petunia	*Petunia*
Phlox	*Phlox*
Pink	*Dianthus*
Pomegranite	*Punica granatum*
Poppy	*Papaver*
Portulaca	*Purslane*
Pot Marigold	*Calendula*
Primrose	*Primula*
Prince's-Feather	*Amarantus hypochondriacus*
Rhododendron	*Rhododendron*
Rock Cress	*Arabis*
Rose	*Rosa*
Rosemary	*Rosemarinus officinalis*
Scabious	*Scabiosa*
Scarlet Sage	*Salvia*
Smilax	*Smilax*
Snapdragon	*Antirrhinum*
Sneezeweed	*Helenium*
Snowdrop	*Galanthus*
Sowbread	*Cyclamen*
Spiræa	*Spiræa*
Starwort	*Aster*
Stocks	*Matthiola*

Sunflower	*Helianthus*
Sweet Pea	*Lathyrus*
Sweet William	*Dianthus barbatus*
Thistle	*Carduus*
Tickseed	*Coreopsis*
Tobacco Plant	*Nicotiana*
Tulip	*Tulipa*
Verbena	*Abronia*
Verbena, Lemon	*Aloysia citriodora*
Viburnum	*Viburnum*
Violet	*Viola*
Virginia Creeper	*Vitis*
Water Lily	*Nymphæa*
Windflower	*Anemone*
Wistaria	*Wistaria*
Yarrow	*Achillea*
Zinnia	*Zinnia*

A LIST OF FLOWERS ARRANGED ACCORDING TO THE BLOSSOMING PERIOD

Spring

Almond, Flowering
Anemone
Azalea
Canterbury Bell
Clematis
Crocus
Currant, Flowering
Daffodil
Forget-Me-Not
Forsythia
Foxglove
Gypsophila
Honesty
Hyacinth
Iris
Jonquil
Larkspur
Lilac
Lily-of-the-Valley
Lonicera Japonica
Magnolia
Narcissus
Pansy
Pink
Rhododendron
Snowdrop
Tulip
Violet
Wistaria

Midsummer

Achillea
Ageratum
Agrostemma
Alyssum
Anemone
Asters
Balsam
Black-Eyed Susan
Bridal Wreath
Calliopsis
Candytuft
Canna
Canterbury Bell
Carnation
Castor Oil Bean
Chrysanthemum
Clarkia
Clematis
Cobæa scandens (vine)
Cockscomb
Columbine
Coneflower
Coreopsis
Cornflower
Cosmos
Cypress Vine
Daisy
Dianthus
Edelweiss
Feverfew
Forget-Me-Not
Four O'clock
Foxglove
Gaillardia
Gardenia
Gentian
Geranium
Hibiscus
Hollyhock
Honeysuckle
Humulus
Hydrangea
Japonica
Larkspur
Lilies
Lobelia
Marigold
May Flower
Mignonette
Monkshood
Moonflower
Morning Glory
Nasturtium
Nemophila
Pansy
Petunia
Phlox
Pinks, Scotch
Poppy
Portulaca
Pot Marigold
Primrose
Roses
Rosemary
Salvia
Scabiosa
Snapdragon
Spiræa
Stocks
Sunflower
Sweet Pea
Sweet William
Verbena
Zinnia

Fall

Achillea
Alyssum, Sweet
Aster
Carnation
Chrysanthemum
Cockscomb
Coreopsis
Cosmos
Dahlia
Gaillardia
Geranium
Gladiolus
Golden Glow
Golden Rod
Hollyhock
Larkspur
Lily, Tiger
Lobelia
Marigold
Monkshood
Moonflower
Nasturtium
Pansy
Pepper Plant
Petunia
Phlox
Poppy, Oriental
Pot Marigold
Prince's-Feather
Roses
Salvia
Scabiosa
Stocks
Sweet William
Verbena
Zinnia

PLANTS SUITABLE FOR WINTER POTTING

Abutilon
Ageratum
Azalea
Begonia
Bridal Wreath
Butterfly Flower
Calliopsis
Candytuft
Canterbury Bell
Carnation
Chrysanthemum
Clarkia
Cobæa scandens
Coxcomb
Cyclamen
Daffodil
Daisy
Fern
Forget-Me-Not
Freesia
Gaillardia
Geranium
Hibiscus
Hyacinth
Hydrangea
Jonquil
Lantana
Lavender
Lobelia
Marguerite
Marigold
Mignonette
Mint
Mock Orange

Narcissus
Nasturtium
Nemophila
Palm
Pansy
Pepper Plant
Petunia
Portulaca
Pot Marigold
Primrose
Rhododendron
Rose Geranium
Rosemary
Salpiglossis
Salvia
Smilax
Stocks
Tulip
Verbena
Violet

A LIST OF PERENNIALS ARRANGED ACCORDING TO COLORS

(Bulbs Included)

Liberty has been taken with this list inasmuch as some flowers which are perennials in the South are annuals in the North.

White

Abutilon
Achillea
Alyssum
Aster
Azalea
Bridal Wreath
Campanula
Carnation
Chrysanthemum
Columbine
Crocus
Daffodil
Dahlias
Daisies
Edelweiss
Forget-me-not
Four o'clock
Gardenia
Geranium
Hibiscus
Hollyhock
Hyacinths
Hydrangea
Iris
Japonica
Lilacs
Magnolia
Monkshood
Narcissus
Oleander
Peony
Phlox
Poppy, Oriental
Primrose
Rhododendron
Roses
Smilax
Snapdragon
Snowdrop
Spiræa
Tulips
Violets

Red

Agrostemma
Aster
Azalea
Carnation
Chrysanthemum
Cockscomb
Columbine
Crocus
Cyclamen
Dahlias
Four o'clock
Freesias
Fuchsias
Gaillardia
Geraniums
Hibiscus
Hollyhock
Honeysuckle, French
Hyacinths
Japonica
Lobelia
Oleander
Peony
Phlox
Polyanthus
Poppy
Primrose
Prince's Feather
Rhododendron
Roses
Snapdragon
Sweet William
Tulips

Blue

Anchusa
Anemone
Asters
Columbine
Cornflower
Forget-me-not
Hyacinths
Hydrangea
Iris
Larkspur
Lobelia
Monkshood
Pansy
Primrose
Scabiosa
Sweet William
Violets
Wistaria

Yellow

Alyssum
Anemone
Asters
Calliopsis
Carnation
Chrysanthemum
Cockscomb
Columbine
Crocus
Daffodils
Dahlias
Forsythia
Foxglove
Geraniums
Gladiolus
Hollyhock

Lilies
Marigold
Monkshood
Pansy
Phlox
Prince's Feather
Roses
Sunflowers
Sweet William
Tulips
Violets

Pink

Bellis
Carnation
Chrysanthemum
Columbine
Coneflower
Hibiscus
Hollyhock
Hyacinth
Hydrangea
Pansies
Peonies
Phlox
Rhododendron
Roses
Sweet William

Purple

Asters
Chrysanthemums
Dahlias
Hollyhock
Hydrangea
Iris
Lobelia
Monkshood
Pansy
Sweet William
Violets
Wistaria

A LIST OF ANNUALS ARRANGED ACCORDING TO COLORS

White

Alyssum, Sweet
Asters
Candytuft
Canna
Carnations
Chrysanthemum
Cobæa scandens
Cosmos
Crocus
Dahlias
Daisy
Dianthus
Four o'clock
Geraniums
Gladiolus
Gypsophila
Hollyhock
Hyacinths
Lily, Calla
Lily, Madonna

Lily-of-the-Valley
Mignonette
Moonflower
Narcissus
Pansies
Petunias
Phlox
Poppies
Portulaca
Snapdragon
Stock
Sweet Peas
Sweet William
Tulips
Verbena
Violets

Red

Asters
Bellis
Cannas
Carnations
Chrysanthemums
Cosmos
Crocus
Cyclamen
Cypress vine
Dahlias
Four o'clock
Gaillardia
Geraniums
Gypsophila Elegans
Hollyhock
Hyacinths
Love-Lies-Bleeding
Morning Glory (vine)
Nasturtiums (vine)
Nasturtiums (dwarf)
Pansies
Petunias
Phlox
Poppies
Salvia
Snapdragon
Stock
Sweet Peas
Sweet William
Tulips
Verbena
Zinnia

Yellow

Calendula
Calliopsis
Cosmos
Crocus
Daffodils
Dahlias
Hyacinths
Lily, Tiger
Marigold
Nasturtium (vine)
Nasturtium (dwarf)
Pansies
Poppy
Snapdragon
Sunflower
Tulips
Verbena
Zinnia

Blue

Ageratum
Aster
Cornflower
Forget-me-not
Hyacinths
Larkspur
Lobelia
Monkshood
Pansies
Petunias
Scabiosa
Sweet Peas
Sweet William
Verbena

Pink

Asters
Balsam
Bellis
Carnations
Chrysanthemums
Clarkia
Coneflower
Hyacinth
Periwinkle
Phlox
Sweet Peas
Verbenas

Purple

Aster
Balsam
Hyacinths
Morning Glory
Pansies
Petunia
Stock
Sweet Peas
Sweet William
Verbena

FLOWERS FOR CUTTING

Achillea
Ageratum
Anchusa
Anemone
Aster
Bachelor's Button
Bridal Wreath
Calendula
Candytuft
Carnation
Chrysanthemum
Clarkia
Columbine
Coreopsis
Cornflower
Cosmos
Daffodil
Dahlia
Daisy
Dragon's Head
Forsythia
Foxglove
Gaillardia
Gardenia
Gentian
Geranium
Gladiolus
Golden Glow

Gypsophila
Heliotrope
Hydrangea
Japonica
Jonquil
Larkspur
Lilacs
Lilies
Lobelia
Magnolia
Marigold
Mignonette
Monkshood
Narcissus
Nasturtium
Nemophila
Pansies
Peonies
Petunia
Phlox
Pinks
Poppy, Shirley
Pot Marigold
Primrose
Roses
Salvia
Scabiosa
Scotch Pink
Snapdragon
Spiræa
Stocks
Sweet Peas
Sweet William
Tulips
Verbena
Violets
Zinnia

FLOWERS REQUIRING LITTLE SUNLIGHT

Anemone
Box Hedge
Canterbury Bell
Clematis
Ferns
Forget-me-not
Foxglove
Gentian
Honeysuckle
Iris
Ivy, English
Jack-in-the-Pulpit
Lilac
Lilies (various kinds)
Lily-of-the-Valley
Lobelia
Lupin
Marguerite
Mint
Monkshood
Moonflower
Mountain Laurel
Nasturtium
Palms
Peony
Petunia
Portulaca
Primrose
Privet
Rhododendron
Rose, Ayrshire
Rose, Pink China
Salvia
Shooting Star
Silene
Sweet Peas
Violets
Wistaria

FLOWERS THAT THRIVE IN DAMP PLACES

Achillea
Crocuses
Dahlias
Elephant's Ear
Ferns (various kinds)
Gentian
Giant Reed
Jack-in-the-Pulpit
Japonica
Lilies (various kinds)
Lily-of-the-Valley
Magnolia
Marsh Pea
Rhododendron
Saxifrage
Sweet Flag
Violets

FLOWERS FOR THE ROCK GARDEN

Alyssum, Sweet
Campanula
Candytuft
Cyclamen, hardy
Dianthus
Edelweiss
Geraniums
Gypsophila, Creeping
Jessamine
May Flower
Phlox
Pinks, Alpine
Poppy, Alpine
Portulaca
Primrose
Rock Cress
Saxifrage
Snapdragon

VEGETATION GROWN FOR FOLIAGE

Azalea, Evergreen
Barberry
Beets, Garden
Begonias
Box Hedge
Cannas
Castor Oil Bean
Elephant's Ear
Ferns
Holly
Humulus
Ivy, English
Lavender
Love-Lies-Bleeding
Marjoram
Mint
Moonflower
Myrtle
Palms
Privet
Rosemary
Smilax
Virginia Creeper

FLOWERS FOR THE OLD-FASHIONED GARDEN

Ageratum
Alyssum, Sweet
Aster
Bachelor's Button
Balsam
Begonia

Calliopsis
Candytuft
Cannas
Castor Oil Bean
Chrysanthemum
Cornflower
Cosmos
Cockscomb
Cypress Vine
Daffodils
Daisies
Feverfew
Forget-me-not
Four o'clock
Geraniums
Heliotrope
Hollyhock
Honeysuckle
Humulus
Iris
Jonquils
Larkspur
Lavender
Lilacs
Lily-of-the-Valley
Marigold
Mignonette
Mint
Morning Glory
Nasturtiums
"Old Man"
Pansies
Peony
Petunia
Phlox
Pinks, Scotch
Portulaca
Primrose
Prince's Feather
Roses (monthly)
Rose Geranium
Rosemary
Salvia
Stocks
Sunflower
Sweet Peas
Sweet William
Verbena
Violets
Virginia Creeper
Zinnia

A LIST OF EVERGREEN SHRUBS AND TREES

Shrubs	*Trees*
Arbor-vitæ	Arbor-vitæ
Berberis	Cedar
Box	Hemlock
Holly	Holly
Ilex	Juniper
Ivy, English (vine)	Pine, Austrian
Laurel	Spruce
Myrtle	Spruce, Oriental
Privet	Yew
Rhododendron	

A PLEA FOR THE BIRDS

ONE object of a garden should be to provide a home for the birds; a home where they can be protected and cared for, and where they will come to delight the family and the neighbors. The sight of a bird or the notes of its song is always a source of pleasure. No one with even the slightest degree of responsiveness in his nature can help being benefited by close contact with these little friends of mankind. There are some thirteen thousand different species of birds known to science, but not with all of these are the ornithologist generally familiar, hence bird life is ever an exhaustive study. Every season of the year finds some birds in every section of the country, though the great majority journey to southern climes with the coming of the winter months.

Some seventy-five years ago John James Audubon worked practically alone and single-handed in this country to protect the birds. He was ridiculed of course, as all organizers of new movements are, but so great was his love for the birds that he

did not heed the ridicule. To-day there are any number of societies in the United States formed for the purpose of protecting the birds and propagating bird life. Men of intellect are making it a life study, cities and towns have passed a law making it a crime to kill certain birds except during a few weeks each year, and boys abounding in superfluous energy are working off that energy by making bird houses instead of scouring the country with the intent to rob birds' nests. If John James Audubon were living to-day he would certainly feel much gratified over the fruits of his labors.

Birds in the garden are profitable, notwithstanding the claim that they eat the garden seed. They may eat a few flower seed but they also eat seeds of weeds, though they will not eat very many of either for the reason that they will be spending their time in search of bugs and worms which would otherwise do great injury to the plants. The following quotation is an extract from a report on the destroying power of birds over insects:

"A quail taken in a cotton field in Texas had the remains of 127 cotton boll-weevils in its craw. Another, taken in Pennsylvania, had 101 potato-bugs.

"A tree-swallow's stomach was found to

contain 40 entire chinch bugs. Two stomachs of pine siskins contained 1900 block olive scales and 300 plant-lice. A killdee's stomach contained 300 mosquito larvæ; and a flicker's, 28 white-grubs. A night-hawk had eaten 340 grasshoppers, 52 bugs, 3 beetles, and 2 wasps.

"Fifty-one species of birds eat hairy caterpillars, and 38 species feed on plant-lice."

Think what it would mean to plant life if the percentage of insectivorous birds was doubled or trebled, and think how much the labors of the gardener would be reduced. And birds will increase in numbers if proper homes are provided for them. Not the same style of home will do for all birds. Martins want roomy houses, robins want open houses, wrens require houses with entrance holes so small that larger birds cannot enter and drive them away. And the home must always be adapted to the needs of the particular kind of bird which is expected to occupy it or it will not be likely to attract them.

And birds are somewhat exacting about the location of their homes. All mankind is not yet friendly to the birds and they are suspicious of human beings in general. They prefer a home hidden among the limbs of trees or secluded among bushes or vines. A bird will have to be pretty

hard up for a home before he will move into a house that is subject to the gaze of every passer-by. Fancy birdhouses are unnecessary. A house simple in line and weatherproof in construction will be all that is necessary in considering the requirements. A house with cracks through which the cold wind and rain can seep will be likely to cause the death of a bird while he would not suffer from exposure in the open air. The reason is that cracks create drafts and a draft will chill a bird, giving him a cold and probably resulting in pneumonia.

A pool of water is one of the surest ways of attracting birds to a garden. They often fly many miles before they come to a pool, a brook, or a river, and if a bath is discovered on the way, they will probably stop and take up their abode somewhere in the neighborhood. A bird bath may be as fancy or as plain as one's taste may dictate, but it should always be placed in a spot where the birds will feel that they are out of range of curious, prying eyes. During the summer the birds can take care of themselves with regard to food but during the winter months it will be necessary in certain sections of the country where snow covers the ground to provide food for them. A feeding house consisting only of a box nailed to a

pole, with three sides closed up as a protection against the prevailing winds, will serve well. If the sides can be of glass, thus insuring a passing bird a glimpse of the food within, so much the better. These feeding houses, too, should be situated not too near a dwelling house.

It may seem cruel to keep birds caged but some species will have no objection to caging if they are well treated. They should be fed and watered regularly and many of them can be trained to fly out for awhile and later return to their homes by such a simple method as tying a string to the leg with the opposite end of it fastened to the cage. If this is done a few times, gradually lengthening the string, and the bird returns happily to the cage, by and by he may be permitted to go free, with the door left open for his return. The practice of using the string should be continued until the bird has many times returned willingly to the cage. Of course, a bird sometimes may become lost to his owner but surely if a bird after kind treatment and freedom prefers the open, he should have it. His home should not be his prison. They were originally intended for greater latitude than humans and none of us would desire prison-life however kindly the treatment.

There is such a wonderful variety of birds and we

are fortunate enough to have some kinds frequent every section of the land. There are song birds and birds for the purpose of ridding the gardens of pests, and birds which apparently have no other value than that of displaying gorgeous plumage,—a value which has proven to be deadly to them in many instances,—and birds which have all three of these qualifications. The robin, for instance, is a beautiful bird, and he is also a song bird and an insect eater, and, unfortunately, in some parts of the country, he is used as food for human beings. Then there is the beautiful scarlet tanager, whose music attracts toward him an enemy after his wonderful feathers. The martin is, perhaps, the most useful bird, for it is claimed by men who are in a position to know that if our fields abounded in purple martins we would not be troubled with mosquitoes, and the curculio, which destroys so many fruit trees, is noticeably absent from the orchard which is frequented by martins. Then there is the mocking bird, and who in the South does not know this wonderful little bird, that imitates with such ease the songs of the other birds around him? It is claimed by the mocking bird lovers that one mocking bird furnishes as much pleasure as any six other birds. They will nest not far from human habitation and their young

are wonderfully fascinating. Often they fall from the nest to the ground when they are first finding their wings, and if picked up and caged, the mother bird will feed them food which is supposed to be poisoned, inasmuch as they seldom thrive when fed by the mother bird, and nearly always die. Hence they are very difficult for human beings to raise.

It is a hopeless task to attempt to enumerate herein even a small percentage of interesting birds. Various reliable books have been written on the subject of birds and among the number that are highly recommended are the following:

Handbook of Birds of N. E. America	by Frank M. Chapin
Bird Life	" " " "
Our Common Birds	" Grant
Bird Homes	" Dugmore
Birds that Every Child Should Know	" N. Blanchan
Bird Neighbors	" " "

Bird Houses

During the fall months is an *excellent period for putting up bird houses.* The birds remaining north will be more than likely to seek them out and occupy them, and those which go south will find their weather-worn appearance attractive in the springtime. This is the season to catch the war-

blers in the South and induce them to remain until late in the spring.

A bird house in a bald, glaring location will not prove attractive to many varieties of birds. They much prefer dense shrubbery, or at least vines and branches. Suit the bird house to the bird. *A wren requires a very tiny entrance* and a house built for a wren should not have a doorway that will permit larger birds to enter, or the wren may be driven from her home.

A unique bird house may be constructed out of a number of cigar boxes. The strips taken from the boxes should be nicked and the other pieces slid into them, and few tacks will be necessary.

All bird houses should be so constructed that the interior may be examined and cleaned. This is important in order that the rubbish of the previous year may be cleaned out, but in some sections of the country it will be found necessary to disinfect to get rid of the gypsy-moth eggs and cocoons.

The martin is the only bird which prefers a house standing out in the open, away from trees. The entrance should be in the opposite direction of the prevailing wind and should be sheltered by an overhanging roof or hood over it.

Rustic houses are the prettiest, and a perch should be included in every house even if the bird does not use it for long at a time. On rainy days many birds will not venture out at all

Houses for bluebirds should have a floor space of at least twenty-five square inches, and should be eight to ten inches in height. The entrance need not be larger than an inch and a half in diameter, and the house should be placed eight or ten feet above the ground.

A clothes post makes a good place to fasten a bird-house, but it should first have been covered with a vine to lure the bird to a more natural setting. Honeysuckle will prove most satisfactory, or a wistaria vine, or climbing rose. This adornment will make of the homely clothes post a pleasing ornament, and the birds will appreciate the foliage.

Bird houses painted white are attractive to humans but the birds would much prefer green, or natural wood.

Many birds which migrate to the South in the winter can be persuaded to stay in the North if suitable homes are provided. Artificial feeding can easily be served.

The hollow limbs of old trees make suitable bird houses and a vine planted to climb up around a tree containing a hollow limb will serve as an attraction to the birds when the tree stands near the house or in a location human beings frequent.

Martins are very luxurious little birds and like a home with many rooms. The rooms should be six inches square in all three dimensions and the entrance holes should be about an inch and a half above the floor level.

The proper size of entrance holes for different birds is as follows:

	Inches in Diameter.
Flickers	2½
Carolina Wrens	1½
Chickadees	1¼
Bluebirds	1¾
Tree Swallows	1½
Woodpeckers	2½
Wrens	1

Robins, catbirds, and kingbirds build houses in the open and only wide-open houses should be provided as they will not frequent houses which they have to enter by means of a small hole.

The large variety of *gourds make excellent bird houses* for the small birds. Any seedsman will recommend the varieties best suited for this purpose.

Food and Water

Among the *foods that will attract the winter birds* are the following:

Salt	Suet
Chaff	Pork
Oats	Corn
Nut meats	Wheat
Celery tops	Millet
Doughnuts	Raw beef
Canary seed	Hemp seed
Sunflower seed	Bread crumbs
Speckled apples	Cracker crumbs
Blemished oranges	Crumbs of dog biscuit
Mortar and fine grit	Fat meats of various kinds

A suet basket constructed of metal and wires can be purchased for about half a dollar, or one can be made by using the metal as a background and fastening wires, or very coarse wire mesh around it. At least half-inch openings should be provided between the wires. This should be kept constantly filled with suet and placed in an accessible place for the birds.

Young house birds may be fed with mashed potatoes mixed with the yolk of a hard-boiled egg. The potato should be thoroughly mashed and in warm weather the food should be given to the birds as soon as made to avoid feeding them food which is in any way sour.

After every feeding a young bird should be given a drink of water. They should be induced to swallow it and if it is put into their mouths with a teaspoon it will be very likely to go down. After the first ten days a little ants' eggs may be mixed with the potato and egg.

Evergreens especially valuable to bird life are the arbor-vitæ, white spruce, balsam fir, hemlock, Colorado blue spruce, Scotch and white pine, and Norway spruce. A branch of one of these put into the bird cage will give a great deal of pleasure.

Red elderberries will prove a great blessing to wild birds. They will not eat fruits as long as the elderberries last. Do not make the mistake of planting purple elderberries, such as are sometimes used for making wine.

Sunflowers planted late will not scatter so badly as those planted earlier in the season and they can be relied upon as excellent food for the birds.

In feeding hemp seed to young birds, crack it before putting it into their cages or it may be too much for them to digest.

A caged bird should have a piece of fishbone on which to whet his beak. He will love this and

will show his appreciation by the frequent use which he makes of it.

A good way to feed the snowbirds is to sprinkle warm ashes on a clean, clear space, and scatter cornmeal or seed on the warm ashes.

Among the vegetation furnishing foods which are desirable to a large variety of birds are the currant, maple, walnut, chestnut, peach, lilac, dogwood, huckbush, oak, wild rose, red haw, lilac, grapes, spiræa, and sweet-brier. A collection of these plants will both furnish seed and attract insects.

Flowers that will furnish seed for the birds should be planted in the garden to keep the birds from eating the flowers one wishes for one's self. Some of those which produce a good crop of seed are prince's-feather, love-lies-bleeding, asters, calandrinias, California poppies, thistles, forget-me-nots, sunflowers, and tarweed.

A cocoanut shell furnishes an excellent pantry for the birds, and it is one which will not be affected by the weather. Bore a hole in one end and fill the shell with chopped suet, nuts, or other food mixtures.

A cocoanut shell with one third cut away, the remaining two thirds hung suspended by wires, *will furnish a splendid little bird rest at feeding time.* A bird will nest in it with comfort being protected from strong winds while eating the food placed therein.

A food tray protected on its northern and eastern sides, and preferably on the western also, *should be provided in every garden for birds.* If it is placed near shrubbery it will be more likely to attract the shy warblers.

A small piece of salt pork covered with cayenne pepper and hung in the bird cage will not only *cure him of ailments* but will be a treat to him as well.

Hard-billed birds which eat seed are more easily reared than the *soft-billed birds* which depend for a living on insects and fruit.

Birds should be fed with exacting regularity and there should be at all times a cup of water in the cage that they may drink when they please. Young birds, fledglings in particular, require a great deal of water.

Birds should be given some green food every day and plenty of ripe fruit. Young leaves from beets,

lettuce, radishes, and water cress are particularly tasteful to them. Also young and tender grass shoots.

If shrubs and vines are planted to feed the birds, they will not eat so much cultivated fruit. They must eat to live just the same as human beings.

A *bluebird* desires for his food seventy-six per cent. of insects and twenty-four per cent. of wild fruit. *Insects include grasshoppers, beetles, caterpillars, and spiders.*

A sandy soil does not produce a great variety of food for the birds. For *seed eaters,* beach grass should be sown, and plenty of sunflowers. For *fruit eaters,* the bayberry, sea buckthorn, sand, cherry, beach plum, and cranberries.

Near the coast, *trees that will withstand the wind* should be planted *for the birds.* Among them are: Juniper, barberry, English thorn, red-berried elder, Staghorn and smooth sumac, privets and mountain ash.

Plant wild-cherry trees for the birds. There is nothing they love more than cherries. Allow the fruit to dry on the tree and fall to the ground when the leaves drop.

A cupful of cornmeal mixed with a cupful of German moss meal and a cupful of meal made from dried peas, and a little molasses added, should be fried for twenty or thirty minutes, and a much appreciated dish will be ready *for the caged birds which do not relish hard grain.*

A Russian mulberry tree is one of the best trees for attracting the birds. Among the birds that will visit it are: *Kingbirds, orioles, sparrows, starlings, goldfinches, cuckoos, flickers, robins, scarlet tanagers, thrushes, blackbirds, purple grackles, catbirds, and redstarts.*

When caged birds do not seem to be thriving, change the food you are giving them. A healthy bird will be lively and spirited at all times except when he is moulting. *Grated carrot* will often prove to be a beneficial change, and *is a good food* at any time.

Insect-eating birds will relish a grasshopper, or some other insect for which they have a natural desire. Be sure to give them some occasionally. They have a right to their natural food.

Blackcaps and other ripe berries should be given to the shut-in birds daily in berry season. There is no food they will like better.

A bird's tree will be well patronized. Tie on it all the bones which are left from the table. They always have on them shreds of meat, fat, and gristle. Wheat ears, clover tops, and sunflower heads will prove a great attraction, while broken crackers and bread crumbs sprinkled in the crotches will be eaten readily.

No one tree will attract such a great variety of birds as the Russian mulberry. If you have room for but one tree, be sure that is the kind you plant.

Japanese millet holds its seeds well and if planted thickly where it can grow up through a horizontal lattice work, makes a valuable cover and feeding place for winter birds. *Canary grass* is also a very good selection *for seed-eating birds.*

Larches and pines of various kinds are most attractive to *crossbills*, and birches and elders are eagerly sought by *goldfinches and redpolls.*

Berry bushes especially for the birds planted near the strawberry bed, raspberry patch, and in the orchard will preserve those fruits for family use. The bird bushes should be a little taller than the fruit for table use so they will sight it first.

A planting in accordance with the table below will furnish *fresh food for the birds throughout the year:*

January, February, March, October, November, December	Juniper, red cedar, bayberry, hackberry, barberry, pokeweed, flowering crab apple, chokeberry, English thorn, beach plum, holly, crowberry, bittersweet, buckthorn, Virginia creeper, summer grape, wintergreen, snowberry, cranberry, privet.
April, May	Hackberry, bayberry, greenbrier, red cedar, pokeweed, chokeberry, flowering crab apple, pasture rose, crowberry, sumac, inkberry, black alder, mountain holly, buckthorn, summer grape, wintergreen, and cranberry.
June, July	Juniper, red cedar, hackberry, common elder, red and white mulberry, barberry, wild gooseberry, red currant, June berry, wild strawberry, wild blackberry, wild red cherry, sand cherry, cranberry, blueberry, bearberry, and wintergreen.
August, September	Bayberry, hackberry, red cedar, juniper, barberry, pokeweed, sassafras, spice bush, wild gooseberry, red currant, chokeberry, mountain ash, June berry, cockspur thorn, beach plum, red and black cherry (wild), wild blackberry, pasture rose, crowberry, sumac, ink berry, alder, Virginia creeper, frost grape, buffalo berry, bunch berry, flowering dogwood, wintergreen, bearberry, and cranberry.

Many birds are compelled to fly miles to obtain water. Young birds that are unable to fly long distances often die for lack of a drink. The simplest sort of devise is just as good for holding water as

a highly ornamented one. A roasting pan, painted white inside and out will be very attractive.

Perhaps the really *best-planned bird baths* are pools of a few inches in depth, the bottom sloping gradually upward toward the edge. Both bottom and edge should be rough to afford a safe footing for the tiny claws. A pool of concrete will be excellent, and if a metal receptacle is used, it will be well to have it roughened.

Birds appreciate a water supply in winter as well as in summer.

A bath on top of a rockery will be attractive and convenient. Fashioned of concrete, they can easily be made by an amateur.

When bird baths are sunk into the ground, or placed where they can easily be reached by cats, it is best to surround them by thick shrubbery, to make the cat's approach difficult. Most birds prefer the bath on the ground, for they can then hop out and shake themselves off before having to fly.

Birds cannot fly far with wet feathers, so be sure to have bushes or trees near the bath that they may fly there and shake themselves off. They

enjoy drying and pruning themselves as much as they enjoy the bath.

Land birds never go directly into deep water, so a series of stones or steps should be arranged to enable them to enter the water gradually. If the bath must necessarily be deep, place stones in it that reach to the top of the water.

Birds always enjoy cool water, therefore, the bird bath or fountain should never stand where it is exposed to the rays of the sun, or the birds may not be attracted by it at all.

The elder, sumac, and tartarian honeysuckle produce *berries that the birds relish*, and it is to be hoped that one or more of these may be placed *near the bird bath.*

Bits of Information

The best way to study birds is first hand, out in the fields. A reliable bird-guide book will prove of inestimable value in learning the habits of the birds, and when illustrated in colors will aid in recognition of the various kinds. A notebook and pencil should be at hand for jotting down all observations.

Wherever there are insects, there will be found birds. They usually frequent pastures, orchards, trees of the village, and the borders of springs and brooks.

For birds that will not nest in houses, plant trees and shrubs with berries on them, or near by. Thickets, where they can be screened from the approach of humans, are much appreciated.

It has been proven that the bee-martin eats only the drones among the bees, hence they are not detrimental to have around when bees are kept. The bee-martin is also known by the name of kingbird.

The best way to eliminate the English sparrow from the gardens is to systematically destroy their nests and eggs every ten days or two weeks during the breeding season.

Crows, blackbirds, magpies, and blue jays are doubtful benefits to a neighborhood.

The United States Government report states that a virtue has been found in sparrows, in that they save the country nearly a million dollars a year by consuming great quantities of the seeds of weeds.

Woodpeckers and kingbirds are very valuable to the fruit grower as they consume a great many of the insects that infect the barks of trees. *Bluebirds*,

too, destroy a great number of these insects and take no toll from the trees.

A shelter box will be a great comfort to the birds on very cold or stormy days. Procure a box of thick wood, line the box with cotton batting, and turn the open end toward the south. Place a piece of wire fencing on the limb of the tree near the box *to keep the cats away.* Cats soon learn the places birds frequent and will take their daily naps near the spot, eagerly watching with one eye half open all the time.

Birds do not like being crowded and if a place is studded with bird houses only a few of them will be occupied. Nests built in shrubbery will come to a bad end if the shrubbery is often disturbed. They are impatient of human meddling and should be granted all the privacy possible during the incubating and brooding period.

A Christmas tree for the birds should be an annual custom. The discarded Christmas tree should be untrimmed and then retrimmed with cheesecloth bags filled with suet, with small cups or cans of seed, bread crumbs, oats, etc. Sheaves of wheat, cornstalks, and branches of holly will add to the pleasure derived by the birds. It should be densely

crowded in order that the birds may get in and hide.

The death of many birds has been caused by careless spraying of trees and shrubbery with *arsenate of lead.* Think of the birds when spraying, and avoid, if possible, putting the arsenate of lead where they will be likely to get at it.

Birds eat grasshoppers, beetles, wasps, mosquitc larvæ, potato bugs, boll-weevils, and many other kinds.

As many as fifty varieties of *birds eat caterpillars*, while thirty kinds feed on *plant-lice.*

Birds will not sing unless they hear singing. They learn by imitation only.

The best time of day, during the summer, to study the birds is between sunrise and ten o'clock in the morning, and again just before sunset. During the middle of the day, the birds keep out of sight as much as possible. *During the winter months*, the best hours are between ten o'clock in the morning and two o'clock in the afternoon. The spring is the best season of the year to start bird study.

Birds mate and nest early in the year when natural food is abundant, and they will not have to go far from the nest for nourishment.

The best location for bird study is in a meadow with water and trees in close proximity, for some birds will frequent the wooded section and others will come seeking water.

To disturb the eggs in a bird's nest is cruelty in the extreme. The mother bird always knows when her eggs have been handled and she resents it bitterly, and often will abandon the nest and the eggs with it.

Birds are second in rank among animal life. They are of a lower order than mammals, or animals which suckle their young, and on a higher plane than the reptiles.

Many ages ago birds had teeth, but the only indication of teeth now is a roughness of the bill found in some species.

Bats are not classed as birds, though they fly through the air. Their classification is based on the fact that they are mammals.

A narrow shelf fastened on the barn below the eaves will attract cliff swallows and eave swallows. Barn

swallows will be attracted by an opening in the gable end of the barn.

Flycatchers, kingbirds, purple martins, chimney swifts, nighthawks, whippoorwills, Canadian warblers, and ruby-throated humming birds are among *the birds that catch their food as they fly through the air.*

The whippoorwill builds no nest but lays its eggs among dead leaves which have fallen in holes and in other places where the brush will hide them.

Among the birds which frequent fruit trees are the robin, the bluebird, the mocking bird, the house wren, various warblers, the Baltimore oriole, the chickadee, the brown thrasher, and tree-sparrows.

The bobolink, meadow lark, nighthawk, sparrow, goldfinch, and the red-winged blackbird sing as they fly.

Crows destroy other birds and are practically of no help to anyone, except that they will follow the plow and eat worms, bugs, and other insects. However, the number of pretty and useful birds they destroy would kill many more insects than

the crows; hence to kill a crow is to benefit humanity.

Be sure to plant several honeysuckle vines *if you would attract the little humming bird.* There is nothing they love better.

Grass should not be cut in the nesting fields during the breeding season *if the bobolinks, meadow larks, and bob-whites are to be protected.*

When birds attack the watery fruits such as grapes, pears, etc., *it is often because they are thirsty.* A bird fountain, of even the crudest kind, will sometimes protect the fruit.

Frequent baths will do much toward keeping birds healthy and clean. The water should be changed every day, or at most every second day. When the birds are moulting they are not inclined to take such frequent baths.

When sparrows have formed the habit of roosting on the ledges of the piazza posts and other painted woodwork, take a long pole and shoo them away several evenings in succession, and they will soon decide that it is not a comfortable place to sleep.

Cultivate the *purple martins* and they *will help to get rid of the English sparrow* which is such a nuisance.

Kingbirds will drive away English sparrows, crows, and blue jays, and should be attracted by giving them what they like best to eat. (See pp. 318, 323, 325.)

When young birds seem ill and generally out of sorts, try putting into their mouths a mixture of half-whiskey and half-water; or a few drops of paregoric in a spoonful of water. This will usually revive their spirits and stimulate them to normal condition.

Young birds want food as soon as they are awake, hence *the cage should be covered with a dark cloth at night* to prevent their waking too early. It is better to cover the cages of all birds at night to prevent them waking the household before the members are ready to stir.

Birds should have a cage large enough to move around in freely. *They must have exercise in order to thrive.* One, two, or even three perches will prove a great comfort to them. Remember, under natural conditions they have the whole world in which to roam.

Put the bird bath well up away from the reach of cats. Many a bird has met an untimely death while in the act of taking his bath. The cat only too soon learns that this is a favorite spot of the birds and will lie quietly in wait for hours to get a chance to pounce upon his tender little prey.

A nest built like his native wood's nest will make a bird very happy. *In every way make their new surroundings as much like the natural home as possible.* Birds often droop and die from sheer homesickness, when a bit of green and a homelike nest would have kept up their spirits.

One screech owl will make an interesting pet, but when two screech owls are put in a cage together, all but the bones and feathers of one may be missing in the morning. They frequently eat their own kind.

The most humane way to get rid of English sparrows is never to let the eggs hatch. If the nests and eggs are watched closely these little birds can be eliminated. It seems cruel, but they are a proven pest and in no way a pleasure. In the State of New York there is a fine imposed for feeding them.

A new wonder of bird life has come to light. In North America the birds that live in the colder sections fly south for the winter, but in South America there is no similar movement from the colder to the warmer sections.

To prevent sparrows roosting in any particular spot, take an old paint brush, dip it in tar, and apply to the spot. They will not try it the second time after the tar is on.

To prevent cats from getting at the birds' nests, train a thorny rose vine to grow around the trunk of the tree, or fasten a piece of tin or zinc around the tree in the shape of an inverted funnel. The metal should be thirty inches wide. Still another way is to run a circle of wire around the trunk of the tree, sufficiently high that the cat cannot jump above it, and suspend from it a dozen long-necked bottles. When the cat is climbing up and reaches the bottles she will experience trouble and soon grow discouraged.

The little spotted ladybird is one of the fruit growers' and farmers' best friends. It lives chiefly upon plant-lice, and if there are enough around the lice will be kept in check.

Two species of bluebirds inhabit the Western States, the mountain bluebird and the Western bluebird.

The birds of beautiful plumage are the insect eaters. Nature intended the birds to do their work by ridding the earth of insects. It is claimed that *insects carry germs* that cause two thirds of the world's diseases. The greater the number of insects, the greater the loss of life. *Saving a bird means saving human life.* A wren will eat from twenty-five to fifty worms in fifteen minutes.

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